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PITFALLS IN DIAGNOSTIC USE OF RADIOACTIVE IODINE

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The relatively recent introduction of the use of tracer doses of radioactive iodine (I^{131}) in diagnosis of thyroid disorders has had widespread acceptance. It is not our purpose to deprecate the usefulness of this procedure, but we are convinced that its limitations must be considered. Uncritical reliance upon techniques using I^{131} has led to the abandonment of older diagnostic procedures that have stood the test of time. We have particular reference to the disrepute into which the determination of the basal metabolic rate has fallen. This desuetude is, in our opinion, unjustified, even if one gives full weight to all the errors inherent in this test. We also wish to emphasize that the diagnosis of the presence or absence of thyroid disease is the province solely of the clinician and the only function of the laboratory is to give him data that he must then evaluate with all the other information about the patient that he has acquired by a full and careful history and physical examination. It is only the critical evaluation of all these data by a seasoned clinician that can reasonably be expected to lead to a correct diagnosis. The clinician who allows himself to be dominated by a laboratory technique, new or old, is doomed to disaster.

This paper presents data on 113 patients. At the time of the studies reported each of the patients was undoubtedly euthyroid in the opinion of at least two experienced clinicians. Wherever possible, the serum protein-bound iodine level and the basal metabolic rate were determined as laboratory aids in the confirmation of the clinical impression. Two diagnostic procedures employing I^{131} were then employed. The first was the uptake of I^{131} by the thyroid gland measured 24 hours after the oral administration of the tracer dose. The second was the measurement of the concentration of protein-bound I^{131} in the plasma 72 hours after administration of the same tracer dose. The diagnostic value of this latter determination was reported by us previously.[1]

The data presented demonstrate that in this group of 113 clearly euthyroid individuals either the uptake studies, the protein-bound serum I^{131} values, or both were in the range generally accepted as indicating hyperthyroidism. The implication of these observations is obvious. If the I^{131} studies alone had been considered, many normal patients would have been subjected to unnecessary treatment; other patients, already cured of their previous hyperthyroidism, would have received further treatment with the possible development of avoidable myxedema.

METHODS

Basal Metabolic Rate.—The basal metabolic rate was determined in the postabsorptive state. The usual clinical closed circuit apparatus with a soda-lime absorber was used.

Protein-Bound Iodine.—The serum protein-bound iodine (I^{127}) level was determined in duplicate on 1 cc. samples of plasma or serum by the Barker procedure. We have had a wide experience with this method, and the normal values vary between 4 and 8 mcg. per 100 ml.

I^{131} *Uptake.*—From 25 to 100 μc of carrier-free I^{131} was administered by mouth in about 100 ml. of water. The number of microcuries present in the thyroid gland was measured 24 hours later with a properly shielded bismuth Geiger-Müller tube 23 cm. from the jugular notch. This tube had been previously calibrated with sources of I^{131} of known concentrations at the same working distance. The uptake was recorded as the percentage of the administered dose present in the thyroid gland, allowing for decay. Values up to 55% were considered normal.

I^{131} *Blood Levels.*—If no well-type scintillation counter is available, the methods outlined in our previous publication [1] can be followed. We now use a well-type scintillation counter exclusively. Four milliliters of serum or plasma 72 hours after the administration of the same tracer dose that was used for the uptake studies is pipetted into a 15 mm. by 125 mm. test tube. This is placed in the well, and the radioactivity is measured, the instrument having previously been standardized with

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The radioactive iodine (I^{131}) used in this study was supplied on allocation by the United States Atomic Energy Commission.

1. Silver, S., and Fieber, M. H.: Blood Levels of I^{131} After Tracer Doses in the Diagnosis of Hyperthyroidism, Proc. Soc. Exper. Biol. & Med. **75**: 570, 1950. Silver, S.; Fieber, M. H., and Yohalem, S. B.: Blood Levels After Tracer Doses of Radioactive Iodine in the Diagnosis of Thyroid Disorders, Am. J. Med. **13**: 725, 1952.

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known concentrations of I^{131} in the anticipated range. If the reading of this 4 ml. sample is less than 0.0003% of the administered dose per milliliter (0.3% of the administered dose per liter of serum), no further determination is required and the value is in the euthyroid range. If the value for the untreated serum (or plasma) is in excess of 0.3% of the administered dose per liter, it is necessary to determine the protein-bound I^{131} as distinguished from the total I^{131}, which represents inorganic I^{131} in the form of iodide and protein-bound I^{131} in a form presumably hormonal. To the 4 ml. of serum in the test tube previously measured is added 11 ml. of 10% trichloroacetic acid. This is mixed well and then centrifuged. The supernatant fluid is discarded, and the precipitate is suspended in 15 ml. of water to which a few drops of the trichloroacetic acid have been added. This mixture is mixed well again and then centrifuged again. The supernatant fluid is again discarded, and a third washing carried out as before. The final supernatant fluid is discarded, and the final precipitate is dissolved in normal sodium hydroxide to a final volume of approximately 4 ml.

The tube is then replaced in the well counter and the activity of its contents recorded. Three washings, properly performed, will remove all inorganic I^{131} likely to be encountered. The upper limit of normal for protein-bound I^{131} is 0.3% of the administered dose per liter of plasma 72 hours after administration of the tracer dose. Values above this level are considered "hyperthyroid." The 4 ml. sample of plasma here recommended is used when the tracer dose is approximately 25 μc of I^{131}. If the tracer dose approaches 100 μc, only 1 ml. of plasma is required for the determination.

RESULTS

A review of the results shown in the table shows that in this group of 113 patients, who were all clearly euthyroid at the time these studies were made, three groups of patients can be separated. Group 1 comprises the patients with high uptakes of I^{131} (above 55%) but with normal blood levels of protein-bound I^{131}. Group 2 contains those who showed a normal uptake of I^{131} but a distinct elevation of the protein-bound I^{131} levels in the plasma. The third group is composed of those euthyroid patients who showed both an elevated uptake of I^{131} and increased blood levels of protein-bound I^{131}. All protein-bound iodine levels in the plasma were measured 72 hours after administration of the tracer dose. There were 33 patients in group 1, 51 in group 2, and 29 in group 3. It will be noted that only 2 of the 33 patients in group 1 had been cured of hyperthyroidism, whereas 46 of the 51 patients in group 2 and 27 of the 29 in group 3 were in this category. The implication of these findings will be returned to later.

PERTINENT LITERATURE

Results of I^{131} studies indicative of hyperthyroidism in normal or even hypothyroid patients have been mentioned in the literature almost from the time of earliest use of I^{131} in the diagnosis of thyroid disease. So far as we know, however, no detailed study of this phenomenon has ever been made.

In 1939 Hamilton and Soley [2] reported high uptakes of I^{131} in patients with hyperplastic nontoxic nodular goiters. In 1942 Leblond and Mann noted that rats kept on diets low in iodine had an abnormally high uptake of I^{131} and that the thyroid glands showed histological evidences of hyperplasia. Leblond compared these thyroids to those under stimulation with thyrotropic hormone. In 1943 Hamilton and Soley [3] returned to the problem and reported that 2 of 10 hypothyroid children had abnormally high I^{131} uptakes. Both of these children had large goiters. This is an interesting report in view of the observations on "goitrous cretins" made later. In 1944 Rawson and his co-workers reported uptakes of 87% in rats made goitrous with thiocyanate. Lerman, Jones, and Calkins [4] in 1946 reported "two sporadic cretinous brothers with goitre" who had uptakes of 87 and 58%. In 1946 when Soley [5] reviewed his first 45 cases of hyperthyroidism treated with I^{131}, he found one patient who was clinically cured but had an uptake of 75%. He did not comment on the possible mechanism involved in this unusual finding. In 1949 Werner, Quimby, and Schmidt [6] spoke of high uptakes after clinical cure of hyperthyroidism by various methods. Their highest recorded uptake was 50%, but they used 35% as their upper limit of normal. In the same year Raben and Astwood recorded "hyperplastic, non-toxic goitre" with high uptakes of I^{131}.

Stanbury and Hedge [7] in 1950 reported "a family of goitrous cretins" where they found three instances of high uptakes of I^{131}. In each of these they were able to accomplish a discharge of a significant amount of the trapped I^{131} by the administration of thiocyanate and concluded that these individuals had good thyroid function so far as the trapping of inorganic iodine was concerned but that they were unable to convert this iodide into protein-bound iodine in the thyroid gland. Keating and co-workers [8] in 1950 reported high accumulation rates of I^{131} in euthyroid individuals with adenomatous goiters, colloid goiters, and thyroid hyperplasia and also after withdrawal of antithyroid drugs. In the same year in a study of 1,400 normal patients, Werner [9] found 12 who showed uptakes between 40 and 55%. He considered 40% the upper limit of normal. In 1951 Blomfield and others [10] reported on 20 cases of hyperthyroidism treated with I^{131}. They were able to follow 18 patients, of whom

2. Hamilton, J. G., and Soley, M. H.: Studies in Iodine Metabolism by the Use of A New Radioactive Isotope of Iodine, Am. J. Physiol. **127**: 557, 1939.

3. Hamilton, J. G.; Soley, M. H.; Reilly, W. A., and Eichorn, K. B.: Radioactive Iodine Studies in Childhood Hypothyroidism, Am. J. Dis. Child. **66**: 495, 1943.

4. Lerman, J.; Jones, H. W., and Calkins, E.: Studies on 2 Sporadic Cretinous Brothers with Goiter, Together with Some Remarks on the Relation of Hyperplasia to Neoplasia, Ann. Int. Med. **25**: 677, 1946.

5. Soley, M. H.: Miller, E. R., and Foreman, N.: Graves' Disease: Treatment with Radioiodine (I^{131}), J. Clin. Endocrinol. **9**: 29, 1949.

6. Werner, S. C.; Quimby, E. H., and Schmidt, C.: The Use of Tracer Doses of Radioactive Iodine, I^{131}, in the Study of Normal and Disordered Thyroid Function in Man, J. Clin. Endocrinol. **9**: 342, 1949.

7. Stanbury, J. B., and Hedge, A. N.: A Study of a Family of Goitrous Cretins, J. Clin. Endocrinol. **10**: 1471, 1950.

8. Keating, F. R., Jr.; Haines, S. F.; Power, M. H., and Williams, M. M. D.: The Radioiodine-Accumulating Function of the Human Thyroid Gland as a Diagnostic Test in Clinical Medicine, J. Clin. Endocrinol. **10**: 1425, 1950.

9. Werner, S. C.; Hamilton, H. B.; Leifer, E., and Goodwin, L. D.: An Appraisal of the Radioiodine Tracer Technic as a Clinical Procedure in the Diagnosis of Thyroid Disorders: Uptake Measurement Directly over Gland and Note on Use of Thyrotropin (T. S. H.), J. Clin. Endocrinol. **10**: 1054, 1950.

10. Blomfield, G. W., and others: Treatment of Thyrotoxicosis with Radioactive Iodine, Brit. M. J. **2**: 373, 1951.

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Results of Studies with Radioactive Iodine (I^{131}) in Clinically Euthyroid Persons

Clinical Status	Group 1 Case No.	Group 1 Uptake*	Group 1 P.B.-I^{131}†	Group 1 P.B.I.‡	Group 1 B.M.R., %	Group 2 Case No.	Group 2 Uptake*	Group 2 P.B.-I^{131}†	Group 2 P.B.I.‡	Group 2 B.M.R., %	Group 3 Case No.	Group 3 Uptake*	Group 3 P.B.-I^{131}†	Group 3 P.B.I.‡	Group 3 B.M.R., %
Previously hyperthyroid; euthyroid after surgery	1	61	0.19	5.6	+ 7	34	48	0.39	...	....	85	85	1.40	5.5	....
	2	70	0.20	5.3	0	..	..	....	...	....	..	..	....	...	....
Previously hyperthyroid; euthyroid after surgery and x-ray therapy	..	..	....	...	....	35	45	0.55	3.9	− 9	..	..	....	...	....
Previously hyperthyroid; euthyroid after surgery and I^{131} therapy	..	..	....	...	....	36	41	1.40	...	....	86	89	0.63	...	....
	..	..	....	...	....	37	45	0.40	6.3	....	87	79	1.00	5.7	....
	..	..	....	...	....	38	24	0.53	3.6	−17	88	70	1.80	6.8	+ 5
	..	..	....	...	....	39	38	1.20	4.2	− 9	89	58	1.50	5.6	0
Previously hyperthyroid; euthyroid or hypothyroid after treatment with I^{131}	..	..	....	...	....	40	30	0.40	1.6	....	90	76	0.50	4.2	0
	..	..	....	...	....	41	34	0.57	5.2	....	91	57	1.20	2.9	....
	..	..	....	...	....	42	28	1.10	...	+ 4	92	76	0.60	5.1	+10
	..	..	....	...	....	43	52	0.55	4.8	− 7	93	55	2.00	4.0	+ 9
	..	..	....	...	....	44	25	0.40	6.0	− 7	94	74	1.00	4.6	−10
	..	..	....	...	....	45	54	0.32	5.1	− 8	95	66	1.60	7.5	....
	..	..	....	...	....	46	33	0.60	7.2	0	96	75	2.50	6.4	+10
	..	..	....	...	....	47	39	0.65	3.3	....	97	57	0.50	6.6	+ 6
	..	..	....	...	....	48	26	0.51	3.3	....	98	87	0.50	3.7	− 9
	..	..	....	...	....	49	43	0.70	4.2	....	99	78	1.40	7.8	− 2
	..	..	....	...	....	50	45	1.20	4.7	....	100	55	0.42	3.5	....
	..	..	....	...	....	51	44	0.54	4.2	+20	101	56	0.36	2.5	+ 8
	..	..	....	...	....	52	34	0.76	4.7	....	102	66	2.20	2.2	....
	..	..	....	...	....	53	42	1.60	3.9	....	103	69	0.50	4.8	−12
	..	..	....	...	....	54	40	0.74	7.4	0	104	66	1.80	2.9	+ 3
	..	..	....	...	....	55	25	0.52	2.4	−11	105	73	1.40	...	....
	..	..	....	...	....	56	49	0.65	7.2	− 8	106	56	0.67	7.1	....
	..	..	....	...	....	57	23	0.41	6.5	....	107	56	0.49	4.7	....
	..	..	....	...	....	58	49	0.48	...	0	108	63	1.50	2.2	....
	..	..	....	...	....	59	38	0.70	6.6	+12	109	69	0.60	3.9	+ 2
	..	..	....	...	....	60	37	0.58	5.3	+ 8	110	62	1.30	6.9	0
	..	..	....	...	....	61	26	0.53	...	+15	111	78	1.80	6.9	....
	..	..	....	...	....	62	25	0.59	...	....	..	..	....	...	....
	..	..	....	...	....	63	43	0.30	4.4	+ 4	..	..	....	...	....
	..	..	....	...	....	64	30	0.42	2.9	−18	..	..	....	...	....
	..	..	....	...	....	65	30	1.00	7.0	+18	..	..	....	...	....
	..	..	....	...	....	66	18	0.35	7.4	....	..	..	....	...	....
	..	..	....	...	....	67	30	0.48	6.4	....	..	..	....	...	....
	..	..	....	...	....	68	27	0.68	...	....	..	..	....	...	....
	..	..	....	...	....	69	38	0.80	4.9	....	..	..	....	...	....
	..	..	....	...	....	70	42	0.46	3.8	0	..	..	....	...	....
	..	..	....	...	....	71	24	0.38	1.3	....	..	..	....	...	....
	..	..	....	...	....	72	22	0.63	2.9	....	..	..	....	...	....
	..	..	....	...	....	73	28	0.91	...	+ 7	..	..	....	...	....
	..	..	....	...	....	74	27	0.36	4.7	....	..	..	....	...	....
	..	..	....	...	....	75	37	0.60	4.7	− 5	..	..	....	...	....
	..	..	....	...	....	76	43	0.56	5.8	+11	..	..	....	...	....
	..	..	....	...	....	77	45	1.20	4.7	−16	..	..	....	...	....
	..	..	....	...	....	78	42	0.50	6.1	+16	..	..	....	...	....
	..	..	....	...	....	79	44	0.59	3.2	....	..	..	....	...	....
Nontoxic nodular goiter; no treatment	3	63	0.22	6.8	+22	80	48	0.83	7.3	− 3	..	..	....	...	....
	4	81	0.13	7.5	+ 6	..	..	....	...	....	..	..	....	...	....
	5	64	0.18	...	+ 7	..	..	....	...	....	..	..	....	...	....
	6	60	0.08	5.4	−12	..	..	....	...	....	..	..	....	...	....
	7	58	0.12	...	+ 4	..	..	....	...	....	..	..	....	...	....
	8	69	0.05	4.7	....	..	..	....	...	....	..	..	....	...	....
	9	73	0.11	6.7	....	..	..	....	...	....	..	..	....	...	....
Nontoxic diffuse goiter; no treatment	10	61	0.10	...	....	81	43	0.34	6.5	+16	..	..	....	...	....
	11	64	0.15	2.8	....	..	..	....	...	....	..	..	....	...	....
	12	66	0.03	3.8	+10	..	..	....	...	....	..	..	....	...	....
	13	63	0.14	6.6	− 8	..	..	....	...	....	..	..	....	...	....
Nongoitrous; low-salt diet	14	66	0.09	4.7	....	..	..	....	...	....	..	..	....	...	....
	15	80	0.12	4.5	....	..	..	....	...	....	..	..	....	...	....
Nongoitrous after discontinuation of propylthiouracil therapy	16	90	0.17	2.1	−11	..	..	....	...	....	..	..	....	...	....
Nongoitrous after discontinuation of thyroid extract therapy	17	60	0.10	2.3	−19	..	..	....	...	....	..	..	....	...	....
Nongoitrous; no thyroid disease	18	86	0.01	4.4	....	82	43	0.38	7.2	−15	..	..	....	...	....
	19	57	0.16	...	....	83	27	0.42	...	....	..	..	....	...	....
	20	60	0.14	7.1	+16	..	..	....	...	....	..	..	....	...	....
	21	55	0.12	...	....	..	..	....	...	....	..	..	....	...	....
	22	60	0.15	7.1	0	..	..	....	...	....	..	..	....	...	....
	23	57	0.22	...	....	..	..	....	...	....	..	..	....	...	....
	24	70	0.16	...	−11	..	..	....	...	....	..	..	....	...	....
	25	59	0.22	6.0	....	..	..	....	...	....	..	..	....	...	....
	26	57	0.19	...	+ 5	..	..	....	...	....	..	..	....	...	....
	27	63	0.19	3.8	....	..	..	....	...	....	..	..	....	...	....
	28	66	0.18	6.5	+12	..	..	....	...	....	..	..	....	...	....
	29	60	0.06	6.7	+ 5	..	..	....	...	....	..	..	....	...	....
	30	74	0.12	5.4	+ 7	..	..	....	...	....	..	..	....	...	....
	31	60	0.11	5.7	0	..	..	....	...	....	..	..	....	...	....
	32	60	0.24	6.5	+12	..	..	....	...	....	..	..	....	...	....
	33	72	0.10	6.4	− 7	..	..	....	...	....	..	..	....	...	....
1 wk. after end of thyroid extract therapy						84	50	0.67	...	....	..	..	....	...	....
5 wk. after end of thyroid extract therapy							36	0.30	...	....	..	..	....	...	....
9 wk. after end of thyroid extract therapy							26	0.18	...	....	..	..	....	...	....
No thyroid disorder; muscular dystrophy						..	..	....	...	....	112	55	0.45	5.3	−32
Recovery phase after subacute thyroiditis						..	..	....	...	....	113	57	1.00	...	....

* Percentage of tracer dose in thyroid gland 24 hours after administration.
† Percentage of tracer dose per liter of plasma in washed plasma proteins 72 hours after administration.
‡ Protein-bound serum iodine in micrograms per 100 ml.

16 were clinically cured at the time of their report. Of these, one had an uptake of 62%, and four had levels of protein-bound I^{131} of more than 0.3% of the administered dose per liter of plasma. Stanbury and associates in 1952 reported I^{131} studies carried out in Mendoza, Argentina, an area of endemic goiter, under the title of "The Iodine Deficient Human Thyroid Gland." Most of the glands were very large. Uptakes of over 60% were frequent. Recant and Riggs [11] studied 11 cases of nephrosis. In two cases there were uptakes of 75 and 71% even though the basal metabolic rates were low, as were the serum protein-bound iodine values. R. Fraser reported four cases of induced myxedema following resorcinol therapy in persons with high uptakes of I^{131}.

In 1953 Hubble [12] reported on a cretin with an uptake of 61% that could not be released by thiocyanate, indicating that the iodine was bound to protein in the thyroid gland. Taylor reported on two euthyroid subjects with nodular goiters who showed uptakes of 65 and 86% in 48 hours. Burrows and Ross discussed cases of cured hyperthyroidism in patients who had abnormally high uptakes of I^{131} but showed normal uptakes when this was considered in terms of uptake of stable iodine rather than in terms of I^{131} alone. McGirr and Hutchison in 1953 studied 12 cases of "non-endemic goitrous cretinism." Two of these patients had uptakes of 75 and 77% and the accumulated iodine could not be displaced with thiocyanate. Of the 12 patients, 8 had high serum levels of protein-bound I^{131} 48 hours after administration of the tracer dose. These values varied between 0.49 and 1.12% of the administered dose per liter of plasma. Drummy [13] reported uptake studies in 493 euthyroid individuals. Fifty-six of these had large goiters, 18 had multinodular thyroids, and the remaining 38 had diffusely enlarged glands. Of 18 with multinodular goiters, one had uptake of 62%, and 10 of 38 with diffusely enlarged goiters had uptakes of from 50 to 75%. Blood levels of protein-bound I^{131} and protein-bound stable iodine were not recorded. Stanbury, Taylor, and Burrows and Ross found euthyroid patients with high uptakes.

A patient with postoperative myxedema was reported [14] with a basal metabolic rate of –20%, protein-bound iodine level of 1.3 mcg. per 100 cc., an iodine uptake of 21%, and blood levels of protein-bound I^{131} of 0.4% per liter of serum. In 1954 Morgans and Trotter [15] reported two cases studied 9 to 18 days after the discontinuance of iodine therapy to normal individuals. These patients had uptakes of 79 and 87% and had protein levels in the blood of 2.9% per liter of serum. When the same cases were restudied 25 days later all values were normal. Monroe [16] exposed rats to whole body radiation totaling from 500 to 665 r. He found increased uptake and organic binding of I^{131} one day after the x-ray exposure. These changes were no longer present at 7 or 30 days after the exposure. Hutchison and McGirr [17] observed that the uptake and binding of I^{131} in sporadic goitrous cretinism may both be high. On the basis of butyl alcohol solubility they decided the released organically bound iodine was not thyroxin, but they did not further identify it.

11. Recant, L., and Riggs, D. S.: Thyroid Function in Nephrosis, J. Clin. Invest. **31**: 789, 1952.
12. Hubble, D.: Familial Cretinism, Lancet **1**: 1112, 1953.
13. Drummy, W. W., Jr.: The Use of Radioactive Iodine in the Detection of Thyroid Dysfunction, New England J. Med. **249**: 970, 1953.
14. Blom, P. S., and Terpstra, J.: High PBI^{131} Concentration in the Blood of Patients with Myxedema: Preliminary Report, J. Clin. Endocrinol. **13**: 989, 1953.
15. Morgans, M. E., and Trotter, W. R.: Two Cases of Myxedema Attributed to Iodide Administration, Lancet **2**: 1335, 1953.
16. Monroe, R. A.; Rust, J. H., and Trum, B. F.: Sublethal Total Body Irradiation and I^{131} Metabolism in the Rat Thyroid, Science **119**: 65, 1954.
17. Hutchison, J. H., and McGirr, E. M.: Hypothyroidism as an Inborn Error of Metabolism, J. Clin. Endocrinol. **14**: 869, 1954.

COMMENT

A consideration of the literature cited and the observations here recorded can leave no doubt that a not insignificant number of patients with normal or even decreased thyroid function, when studied with I^{131} tracer techniques, yield results "characteristic" of hyperthyroidism. This pitfall has two serious clinical implications already alluded to. The first is that euthyroid patients may be treated unnecessarily by surgery or with I^{131}, and the second is that hyperthyroid patients who have been adequately treated and cured of their disease may be subjected to further treatment and rendered myxedematous. It is our opinion that some of the post-treatment myxedema following I^{131} therapy has been due to the additional use of therapeutic doses of I^{131} administered on the basis of tracer studies alone without regard to the clinical state of the patient. In determining the status of a patient with thyrotoxicosis who has received one or more therapeutic doses of I^{131}, we are convinced that the best guide as to the necessity for further treatment is the clinical state of the patient. The basal metabolic rate and the protein-bound iodine (stable) of the serum are the two best laboratory aids. The I^{131} studies are the least valuable of the laboratory tests in these patients and can be most misleading.

The mechanism of these discordant results is not yet definitely established. We can conceive of several alternatives. The first is that the renal clearance of iodide has been markedly decreased. The fate of the tracer iodide is determined by the relation between the avidity of the thyroid tissue for iodide and the ability of the kidney to clear iodide from the plasma. A marked decrease in this latter function would leave more iodide available for the thyroid and could result in increased thyroid uptake. Simultaneous renal clearance studies were not made in these cases so no final answer can be given, but there certainly were no evidences of renal disease in these patients and we consider this explanation unlikely. A second possible explanation for the increased uptake could be a decrease in the total miscible iodide pool, essentially a decrease in the iodide concentration in the total body water. That this sometimes occurs is indicated by the studies of Burrows and Ross. We think that this is the most likely explanation for increased uptake in euthyroid individuals. The trapping of a given percentage of the tracer represents, as always, a trapping of the same percentage of the total miscible iodide pool. If the iodide pool is reduced, then the total amount of iodide trapped for a given percentage of tracer trapped will be lower than if the iodide pool were normal or high. The clinical state of the patient is determined by the amount of stable iodide trapped and converted to hormone and secreted. The uptake of I^{131} really represents the percentage of the total stable iodide pool trapped in

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the same period of time. It does not indicate the gravimetric amount of iodine trapped. It is therefore clear that high uptakes of I^{131} can be associated with normal or even decreased uptakes of stable iodide if the stable iodide pool is sufficiently reduced.

We think that the most likely explanation of the high blood levels of protein-bound I^{131} in these euthyroid individuals is the assumption of a reduced hormonal iodine pool in the thyroid gland. If the stored hormonal iodine (thyroxin) is reduced, then a large proportion of this pool must be drawn upon each day in order to maintain the euthyroid state. In other words, a euthyroid individual with a small hormonal pool in his gland has a rapid turnover of this pool even though only the normal amount of hormone is secreted per unit of time. Because the pool is small, the specific activity of the hormone formed and secreted after the tracer dose will be high. Therefore the protein-bound I^{131} level in the plasma will be high even though normal amounts of hormone are secreted each day. The protein-bound I^{127} level of the plasma, a good index of the concentration of circulating hormone, will not be elevated, but protein-bound I^{131} level will be elevated because of the high specific activity of the secreted hormone.

There is good evidence [18] that the lowest thyroidal hormonal pools are found in patients cured of hyperthyroidism, particularly those cured by I^{131}. The large proportion of persons with cured hyperthyroidism that appear in group 2 and 3 of this series confirms this fact and is consistent with the explanation offered above. It is interesting that in group 2 (high uptake—normal protein-bound I^{131}), only 2 of the 33 were previously hyperthyroid, while group 2 (normal uptake—high protein-bound I^{131}) had 46 previous hyperthyroid persons in 51 cases. In group 3 (high uptake—high protein-bound I^{131}), all but 2 of the 29 patients were previously hyperthyroid. The very low thyroidal hormonal pool in these cured patients is the most likely explanation for the "hyperthyroid" protein-bound I^{131} levels.

SUMMARY

Of 113 patients euthyroid during this study, 33 had radioactive iodine (I^{131}) uptakes of more than 55%, but protein-bound I^{131} levels in their plasma were below 0.3% of the administered dose per liter of plasma 72 hours after administration of the tracer dose. Of these 33, only 2 had previously had hyperthyroidism. Although 51 patients had normal uptakes, the protein-bound I^{131} levels in their plasma were over 0.3%. Forty-six of these 51 had been cured of hyperthyroidism. Twenty-nine patients had both increased uptakes and increased plasma protein-bound I^{131} levels, and all but two of these had been cured of hyperthyroidism. The possible mechanisms involved may be related to a reduced iodide pool and a diminished hormonal iodine pool in the thyroid. Awareness of these "false hyperthyroid" results with I^{131} testing will assist the clinician to avoid unnecessary treatment of normal subjects and will prevent further treatment of persons who have been cured of hyperthyroidism with resulting myxedema.

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18. Berson, S. A.: Personal communication to the authors.

MEDICAL PROBLEMS OF SKIN DIVING

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In the past 10 years since World War II "skin diving" has become an increasingly popular sport. Liberal estimates for the number of individuals participating in skin diving throughout the United States for the year of 1954 are numbered at one million. More conservative estimates number these sports divers between 250,000 and 500,000 persons. Many of the divers belong to skin-diving clubs. In California the Council of Diving Clubs list 125 clubs. Throughout the United States there are an estimated 375 clubs. The average age of the skin diver is about 20 years, with a ratio of about 90% male to 10% female divers. Self-contained underwater breathing apparatus is used by approximately one-third of the divers. Statistics to date have been difficult to obtain, and most have been based on estimates from equipment sales. In Europe skin diving is also popular and continues to increase in popularity as here in the United States. Skin diving anywhere is done principally for fun, whether it be spear fishing or exploration. Professional groups have been organized by states and by certain universities for study of marine life. Other fields, such as underwater photography, geology, salvage, archeology, and mining, are sure to take more and more divers in the future below the surface of all bodies of water to study and develop one of the last remaining frontiers.

Diving diseases and accidents formerly were very uncommon and understandably unknown to most physicians except for a few who were specially trained to cope with them in the United States Naval service. With the ever-increasing hordes of skin divers each year, diving accidents are becoming more commonplace. In California from January, 1953, through April, 1955, there has been an average of about one fatality per month. There were, of course, many nonfatal accidents, and there is obviously a need of improved safety programs for the diving public. Most urgent also is the need for the medical profession to be brought up-to-date in this field. A great deal of progress has been made to date by lay organizations to educate the public regarding the all-important matter of diving safety. Several local groups are active in this program of public education and safety. The Los Angeles County Department of Recreation has recently given a course in underwater recreation to a group of their instructors who, during the summer months, will be stationed at county beach and resort areas to further instruct divers in diving safety. The national Red Cross chapter in Long Beach, Calif., has a

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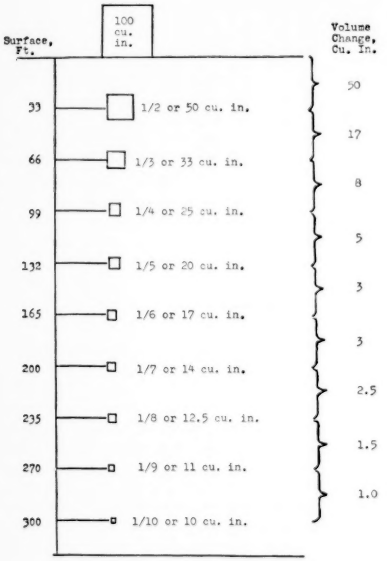
special department devoted to underwater safety. They have also inaugurated a uniform method of accident reporting. In addition to these two groups, there are publications that are beneficial to those who are interested.[1]

There are distinct types of sport divers. The first type, and the one to whom the term skin diver most usually refers, is the diver who wears a face mask and swim fins and relies on the limits of his ability to hold his breath to descend below the surface of the water. This group comprises the majority of divers. The SCUBA (self-contained underwater breathing apparatus) divers are those who rely on a breathing tank of compressed air or oxygen to supply them with a sufficient amount of oxygen while submerged. This allows deeper and more extensive underwater ventures. Divers of any classification are subject immediately to various diving diseases. There



Boyle's law, as applied to pressure in skin diving.

are basically two types of SCUBA units. The first is the "open-circuit" type. This unit is comprised of a tank of compressed air, face mask, and an automatic demand regulator. This type of regulator assures the diver a supply of air at the correct pressure regardless of depth. Waste air is exhaled outside the unit. The other type of breathing apparatus is a closed-circuit, or rebreathing, unit that features a breathing bag and contains 100% oxygen as a breathing medium. The breath is exhaled into a bag; oxygen is added and then rebreathed after it has been filtered through chemicals that absorb carbon dioxide and moisture. One other type of diving, which is still used but to a lesser degree than the above types, is done with homemade diving helmets and masks to which air is supplied by an air hose from surface air compressors. The limitations of the hose, the cumbersomeness of the helmet, and the necessity of having a topside tender to assure proper function of the compressor make this type of diving less popular than the "free" or self-contained units.

1. Diving with Self-Contained Breathing Apparatus, prepared by E. H. Lamphier and J. V. Dwyer Jr., Special Report Series 1954, Washington, D. C., Experimental Diving Unit, U. S. Naval Gun Factory, 1954. Cross, E. R.: Underwater Safety, Wilmington, Calif., Diving Research Publishing Company, 1954.

PHYSICS AND PHYSIOLOGY OF DIVING

It is essential for physicians to become acquainted in a general way with the problems of a diver's environment. Toward this understanding it is important to review Boyle's law. This law states that if the temperature is constant, the volume of a gas varies inversely with the pressure. Hence, the greater the pressure, the smaller the gas volume. At sea level the air in our atmosphere exerts on the body a pressure of 14.7 lb. per square inch, or one atmosphere absolute. For each 33 ft. below the surface of the water the pressure is increased by an additional 14.7 lb. per square inch. So likewise by doubling the pressure from surface to a depth of 33 ft., the volume of air at a depth of 33 ft. would occupy half the volume formerly occupied at the surface. At a depth of 66 ft. the pressure would be three atmospheres absolute (43.1 lb. per square inch), with the gas at that level reduced to one-third its original surface volume (see figure). Therefore at a depth of 300 ft. below the surface the pressure would be 10 atmospheres (147 lb. per square inch), with a tenth of former surface volume of gas. An important factor to recognize at this point is that at shallow depths the changes in gas volume are greater than at deeper depths. For example, going from the surface to 33 ft., a given volume of gas would be reduced 50%. A compressed gas then starting at 33 ft. doubles its volume on returning to the surface. At deeper depths, for example, going from a depth of 270 to 300 ft. there is an increase of one atmosphere (14.7 lb. per square inch) of pressure but a change in gas volume of approximately 1%. Thus the large fluctuation in gas volume near the surface is of importance in limiting a diver's compressed air supply, in equalizing pressure on eardrums and sinuses, and in recognizing and preventing air embolism.

The law of partial pressures states that the pressure of a gas mixture is equal to the sum total of the partial pressures of all the gases contained in the mixture. Also within a mixture of gases, each gas exerts a pressure (partial pressure) independent of all other gases in the mixture. In our surface atmosphere the partial pressures of nitrogen and oxygen are of greatest importance. Under the increase of pressure, carbon dioxide poisoning, carbon monoxide poisoning, oxygen poisoning, and nitrogen narcosis all appear to be related to the partial pressure of the particular gas rather than the total pressure of the air at a specific depth. The total volume of a gas that can be dissolved in a fluid is directly proportional to the absolute pressure. This factor is of importance relative to nitrogen absorption by the body during a descent into the water and the release of the gas again by the body when surfacing. If sufficient nitrogen dissolves in tissues, then on rapid ascent the gas evolves from the tissues faster than the blood stream can carry it away,

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bubbles can form to block capillary blood flow, producing symptoms of anoxia to the tissue supplied by the capillaries. This bubble formation is the etiological factor in caisson disease or "the bends."

Temperature exerts its effect on the body in the water. Ordinarily body cooling takes place by convection and evaporation. Underwater almost all heat transfer is due to conduction from the skin to the water. Cold water can produce a marked drop in body temperature unless some type of insulating suit is worn. Lower water temperatures increase the body metabolism, resulting in a more rapid use of the diver's air supply. Water density, tides, currents, and poor visibility are also factors to be reckoned with in the realm of the diver.

A more specific review of the gases in our environment should be made, since it is the effect that the above laws of physics has on these gases that makes the diver's world so different from his normal habitat. Oxygen occurs in a free state in the atmosphere, of which it forms about 20% by volume. At rest at atmospheric pressure, approximately one-fifth of the oxygen in each breath is absorbed by the body. Violent exercise may increase the amount of oxygen required 10 times over that needed at rest. Applying our gas laws to the diver's oxygen supply, it is seen that if he uses a tank of compressed air, which would supply him with enough oxygen to breathe for an hour on the surface, at a depth of 33 ft. of water the volume of the gas available in the compressed air tank would be one-half; hence it follows that he will have one-half (30 minutes) the air supply at this depth, all other factors remaining constant. If the diver descends to 66 ft., the volume of gas available will be a third that at the surface and would supply the diver with 20 minutes of breathing. Vigorous exercise or cold water temperatures may also further limit the compressed air supply. It is important to plan a dive ahead of time so as not to stay too long at a particular depth and exceed the available oxygen supply. Oxygen lack deadens the faculties, and loss of consciousness may occur quickly before a person realizes what has happened.

Nitrogen, by way of review, comprises about 79% of our air supply. At atmospheric pressure nitrogen has no effect on the body except to serve as a diluent for oxygen. Under pressure nitrogen has two important effects on the body. A narcotizing effect occurs at about four atmospheres absolute (approximately 100 ft.). The effect is similar to the euphoria occurring with alcoholic intoxication. At depths of 300 ft. (10 atmospheres) this is to such a degree as to make attempts to accomplish work impractical. Nitrogen, as the pressures of increasing depths are reached, continues to dissolve in the body tissues. Nitrogen dissolves in fatty tissues to a marked degree. The ratio of fat to water solubility is approximately 5:1. Hence, it is easy to see that with an excess of fat in the body there is an increased ability for the body to retain nitrogen and also an increased tendency for an obese individual to be more susceptible to caisson disease.

Another gas of our normal environment is carbon dioxide, which is known as a natural product of respiration. It comprises about 0.04% of the normal air. Concentrated by low temperatures, increased pressures, and inadequate ventilation, carbon dioxide builds up. When the amount in inspired air reaches 5%, panting occurs; 8% produces increased respiratory distress; 10% produces loss of consciousness. Warning signs of excess carbon dioxide are panting, fatigue, headache, dizziness, and nausea. Symptoms of carbon dioxide poisoning do not occur in "open-circuit" breathing apparatus described above because exhaled air is blown outside the diver's mask. With a homemade helmet or mask carbon dioxide increases can quickly occur if insufficient air is allowed to circulate through the helmet or mask. The above laws of physics and facts concerning the gases of the diver's atmosphere are presented to briefly show the physician's reasons for the importance of safety in diving and the importance of good health for the participants.

PHYSICAL REQUIREMENTS FOR DIVING SAFETY AND COMMON ACCIDENTS

On a health examination the following points are of great importance, and here is where the family physician can serve best to prevent accidents. Perfect health is mandatory. The ideal type of individual is young, slender, and composed and with good vision. Obesity is a definite hazard, as fat tends to retain nitrogen. Since most obese individuals are usually out of condition, they are more prone to exhaustion. Exhaustion is one of the most common hazards to a diver. If treading through water is compared to continuously walking up stairs, it is easy to see that an individual must be in good condition to participate for any period of time. It becomes obvious that any type of chronic illness, such as arthritis, chronic otitis media or sinusitis, heart disease, asthma, syphilis, and chronic gastric intestinal disturbances, is apt to prove disastrous to a diver. Any nervous tendencies in an individual should prompt a physician to discourage him from diving. Nervousness and panic accelerate one's metabolism and prevent clear thinking in situations where cool-headed thinking would otherwise prevent an unnecessary accident. Since most divers dive in teams, the frightened, nervous, or panicky individual can jeopardize the lives of others who may find it necessary to go to his assistance. Incidentally team diving is encouraged, and many times a diving buddy has been the one to assist an exhausted or frightened diver to the surface and safety. A prospective diver should, of course, know how to swim and be at home in the water.

Clean living habits, adequate rest, and plain simple diets are to be encouraged. The effects of cigarettes and alcohol are well known, and the obvious circulatory retardation imposed by them can be dangerous to divers. Individuals who tend to have excess intestinal gas or are prone to constipation should also be discouraged from diving. Head colds are particularly detrimental in diving and may decrease pressure toleration on sinuses and ears. If eustachian tubes are sufficiently edematous so as to prevent equalization of pressure on the eardrums, rupture of the drums can promptly ensue with only 5 to 10 lb. of pressure. Under pressure an individual may also force infected mucus into the middle ear, sinuses, or lungs, with resulting infection occurring as a complication.

CAISSON DISEASE

Caisson disease can occur when a sufficient amount of nitrogen has dissolved in the body tissues and is then followed by a rapid release of pressure. Bubbles form first in the blood stream in areas of poor circulation such as joints, bones, or fat. Mechanically these bubbles occlude a blood vessel and cause tissue anoxia beyond the point of occlusion by the bubbles. Mild symptoms consist of skin itching and pain in joints, tendons, or muscles. Symptoms occur from a few minutes after surfacing up to as long as 15 hours after surfacing. Sometimes the onset of symptoms begins before the diver reaches the surface. Serious symptoms are those of dizziness, vomiting, visual disturbances, and paralysis. Loss of consciousness and death can follow in serious cases. Treatment consists of immediate measures to combat shock; give sedation for pain and to get the patient to a recompression chamber as promptly as possible (see table). Practically every coastal area is within an hour or two of a recompression chamber. Contacting the U. S. Coast Guard will get any physician in touch with the nearest available treatment facilities. Recognizing caisson disease, giving any necessary emergency treatment, and getting the patient on the way to the nearest recompression chamber are the ways we can best serve those stricken with this disease.

Caisson disease rarely occurs at depths less than 40 ft. Divers using a single tank of compressed air are so limited as to time at depths in excess of 40 ft. that they are not prone to develop the "bends." The difficulty, however, is that ever-increasing numbers of divers are using multiple tanks of compressed air to prolong the time they can stay at deeper depths. To add further to this danger these divers will have a total of four to six tanks of air with them on a particular trip. It is not unusual for them to make two or three dives during a single day without allowing time for decompression during any of their ascents to the surface. It should be noted at this point that the danger of several dives during a single day lies in the fact that a subclinical amount of gas may remain dissolved in the tissues for several hours after an ascent from a single dive. If a diver makes another dive before the gas dissolved in his body from the first dive is completely eliminated, he retains this dissolved gas (nitrogen) and adds to it on the second and third dives. Thus even though a single dive was not of sufficient duration to allow enough tissue saturation to produce the "bends" on surfacing, the succeeding additions of gas dissolved in the tissues can add enough nitrogen for bubble formation. This is particularly apt to be facilitated by obesity, overfatigue, or diving in extremely cold water.

Differential Diagnosis for Diving Diseases

Disease	Etiology	Symptoms and Signs	Treatment
Mild caisson disease	Diving in excess of 40 ft. for prolonged periods	1. Onset usually few minutes to 15 hr. after surfacing 2. Pain in joints (knee, elbow, and spine) 3. May have itching or mottling of skin 4. No tenderness, swelling of joints as in sprain	1. Sedation for pain 2. Recompression in chamber as promptly as possible ....
Severe caisson disease	Same as above	1. Onset may occur before reaching surface and up to 15 hr. after surfacing 2. Joint pain as above 3. Vertigo, vomiting, visual disturbances, paralysis, and coma	1. Sedation for pain 2. Emergency treatment for shock 3. Prompt recompression
Air embolism	Diving in excess of 6 ft.; no tissue saturation necessary	1. Symptoms usually occur within few minutes after surfacing 2. May expire before reaching surface 3. Symptoms of severe caisson disease above 4. May show spontaneous pneumothorax	1. Sedation and treatment for shock 2. Artificial respiration and oxygen inhalation 3. Recompression as quickly as possible .....
Asphyxia (carbon dioxide poisoning or drowning)	Accumulation of carbon dioxide, by loss of breathing apparatus, exceeding air supply	1. Panting, fatigue, vertigo, and nausea 2. Convulsions, coma, and apnea 3. Cyanosis	1. Prompt surfacing 2. Artificial respiration 3. Oxygen or carbogen inhalation 4. Treatment for shock
Carbon monoxide poisoning	This gas is a contaminant of the compressed air supply	1. Severe headache 2. May develop fatigue, vertigo, nausea, general uneasiness, coma, and apnea 3. Cherry-red skin, nail beds, and mucosa	1. Surface and remove breathing apparatus 2. Artificial respiration 3. Oxygen inhalation 4. Shock measures
Oxygen poisoning	Breathing pure oxygen under pressure	1. Symptoms of bronchial irritation, vertigo, emotional disturbances, and muscle twitchings 2. Severe convulsions may occur	1. Prompt reduction of pressure 2. Sedation and antispasmodics if convulsions persist

Actual instructions in treatment in the recompression chamber is purposely omitted at this time, but it is hoped that more doctors will become interested enough in the future to warrant a paper devoted primarily to this phase of caisson disease.

OTHER HAZARDS

Air Embolism.—Air embolism occurs when a diver using an underwater breathing apparatus ascends toward the surface holding his breath. As he ascends, the compressed air in his lungs must expand. The expanding air then may rupture alveoli and blood vessels and allow air bubbles to flow rapidly into the pulmonary circulatory system. The bubbles can quickly collect in the left chambers of the heart, occluding the circulation to the great vessels with sudden asphyxia and death. Symptoms can occur from depths as shallow as 7 ft. The symp-

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toms usually occur promptly after surfacing, almost always within 10 to 15 minutes but may occur before reaching the surface. They are symptoms of a serious case of caisson disease. Spontaneous pneumothorax may also occur. Emergency treatment consists of absolute rest with head down, artificial respiration, carbogen or pure oxygen inhalation, general treatment for shock, and recompression as promptly as possible.

Oxygen Poisoning.—Oxygen poisoning is a proved condition that occurs in some individuals when pure oxygen is breathed under pressure. As mentioned above, there are some self-contained units that use oxygen and a rebreathing closed-circuit system. Some people under pressure, who tolerate oxygen poorly, will develop toxic symptoms that can occur in depths as shallow as 33 ft. Symptoms are those of nausea, bronchial irritation, dizziness, emotional disturbances, muscle twitching, and convulsions. The symptoms can become more severe with increasing pressures. The treatment consists simply of reducing the pressure (surfacing) generally with prompt subsiding of symptoms. Convulsions can continue for several hours after surfacing. Use of pure oxygen as a diver's air supply is dangerous and should be discouraged.

Carbon Monoxide Poisoning. — Carbon monoxide poisoning can occur when a diver's air supply becomes contaminated with exhaust fumes. The source of contamination occurs when gasoline-driven compressors, used by manufacturers, are improperly vented. The exhaust fumes are included with the compressed air. Thus a diver inhales increased concentrations of carbon monoxide as he descends below the surface. The ratio of affinity of carbon monoxide and oxygen for hemoglobin is approximately 300.1. Under the increased pressures and higher concentrations of carbon monoxide typical symptoms of carbon monoxide poisoning occur. These are severe headache, fatigability, dizziness, faintness, general uneasiness, and loss of consciousness. As contrasted to the cyanosis of the asphyxiated individual, the unconscious victim of carbon monoxide poisoning shows a cherry-red appearance of the skin, mucous membranes, and nailbeds. Emergency treatment consists of surfacing, removing the contaminated source of air, administering artificial respiration, oxygen inhalation, and the usual measures for combating shock.

Psychological Hazards.—Psychological hazards are important among the medical hazards of shallow water SCUBA diving. An individual who is afraid of the water, perhaps a poor swimmer, and is alarmed by the experience of underwater diving is not likely to be calm or resourceful in event of an emergency. A good diver is neither overfearful nor audacious, but careful, foresighted, and calm in the face of difficulties, including panic among others. Unstable individuals should be discouraged from participating in SCUBA diving.

SUMMARY

Skin diving with use of self-contained underwater breathing apparatus is increasing as a popular sport. A public safety program is felt to be mandatory. Through a study of physics and physiology of diving, health qualifications for divers, and diving accidents and diseases, physicians will play an important role in the field of diving safety.

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COMPLICATIONS FOLLOWING SURGERY FOR BENIGN ANORECTAL LESIONS

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In spite of the fact that a certain degree of standardization of the surgical treatment of benign anorectal disease has evolved during the past decade, postoperative complications still occur too frequently. These are not due to neglect of the underlying technical principles of this type of surgery but rather to a disregard of the refinements in technique and attention to details in the surgical procedure and during the postoperative period. Although there may be minor variations in methods in various surgical centers, we do not believe that these are a significant factor in the incidence of postoperative complications. It is our opinion that adherence to the basic principles concerning the anatomy and physiology of the anorectal region will minimize or eliminate the high incidence of complications that unfortunately still occur. Other writers have reflected this opinion also, and, while it is undoubtedly true, it has tended to draw attention away from the cardinal necessity of developing clear-cut concepts relative to the early recognition and treatment of an abnormal postoperative state. No one can deny the importance of avoiding trouble by performing a technically perfect operation, and it is probably for this reason that little consideration has been given to the problem in the literature.

Postoperative complications are not only embarrassing to the surgeon but they are also annoying or even disabling to the patient. The fear and apprehension that surround dysfunction of the anorectal mechanism are especially acute in the postoperative period, and the prolonged convalescence that follows unrecognized or improperly treated complications places a distracting psychological burden on the person facing such an ordeal. Failure to correct decisively an adverse postoperative course in both its physical and its emotional components produces a patient who is not only despondent and filled

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with misgivings but also skeptical and resentful at the outcome of his surgery. There is probably not another physiological function of the human body that is the object of more direct and indirect emotional attention than that of defecation. When it begins to appear in the patient's mind that some alteration in the normal experience of that act may result from the surgery that was explained to him as treatment of a benign condition, the pattern is created for certain anxiety and mistrust. With these thoughts in mind and assuming that occasional complications will occur even under the best of circumstances, we have endeavored in this discussion to draw from our own experience in the surgical treatment of approximately 5,000 cases of benign anorectal disease and to evaluate those factors that lead to complications in the postoperative period. We have accepted one or more of the following circumstances as being complications when normal recovery is retarded either by preventing the well-being of the patient or by altering restoration of anatomic or physiological function of the anorectum: (1) fecal impaction, (2) hemorrhage, (3) excessive pain, (4) infection, (5) outlet stenosis, (6) incontinence, (7) mucocutaneous fistula, (8) alteration of mucocutaneous junction, (9) pruritus, and (10) anal ulceration.

FECAL IMPACTION

Although the development of a hard mass of fecal material in the rectal ampulla is one of the most common and distressing complications that may occur in the postoperative period, it is often overlooked by the attending surgeon and members of the house staff. The presence of a bolus of stool in the lower rectum leads to pressure and congestion in the anal outlet, with a resulting increase in pain and spasm. There is no doubt that an accumulation of feces, mixed with blood and serum, offers an ideal medium for the growth of intestinal bacteria. This stagnating mass is excessively irritating to the healing surfaces of the mucosa and skin. Thus, the presence of congestion and edema, combined with infection, results in extreme discomfort to the patient as well as actual retardation of healing. It is a simple thing to determine whether or not an impaction is present by merely placing a finger into the rectum. One is easily misled, however, by the patient, suspected of having an impaction, who states that his intestine is emptying each morning. It must be emphasized that defecation may occur despite the presence of a hard shell of impacted feces above the anal outlet. Even a rectal digital examination is not foolproof and may be deceiving when there is a great deal of pain and spasm present. It is exceedingly difficult to explore the rectal ampulla thoroughly in these people, and because of this, a peripheral impaction may be overlooked. The administration of an opiate to obtain the cooperation of the patient may be essential to a proper examination if there is a possibility that an impaction is present.

All of our patients who suffer from anorectal disease are given a complete examination prior to surgery, which includes a proctosigmoidoscopic examination and, in most instances, an x-ray of the colon. Taking this x-ray within four or five days before the date set for surgery is unwise, because it requires at least this long to completely evacuate the barium from the colon. Any barium that remains in the large intestine at the time of operation adds to the risk of developing impaction. The simplest and least traumatic way to remove the inspissated stool is to use digital pressure to break up the mass, followed by liquid petrolatum (mineral oil) and saline enemas. Recently we have been using Phospho-Soda (aqueous solution of sodium biphosphate and sodium phosphate) in place of the saline solution, with satisfactory results. Sedatives are liberally administered before this procedure is carried out, and the procedure is repeated daily until the impaction is entirely removed. The use of hydrogen peroxide and other harsh or irritating substances should be strictly avoided. After removal of the impacted stool, the patient must be carefully observed for evidence of bleeding, for, regardless of how gently and cautiously the procedure is carried out, there is danger of opening recently ligated vessels. The application of an anesthetic ointment and hot, moist compresses has proved to be the best means of relieving the immediate pain that the patient experiences, and, in most instances, within a few hours there is complete relief of all discomfort.

HEMORRHAGE

Most important of the early postoperative complications following anorectal surgery is hemorrhage, for, unless its presence is recognized early and treated promptly, the welfare as well as the life of the patient is in jeopardy. Procrastination is inexcusable, and anything less than specific treatment directed at the exact source of the bleeding is unjustifiable. The unsound idea that all rectal bleeding will stop by placing a pack in or on the anal outlet and tightly strapping the buttocks together, or the false sense of security obtained by assuming that as the patient's systolic blood pressure drops the bleeding will subside, are without foundation and, if practiced on all patients who bleed postoperatively, will lead to disastrous results. While it is true that this method of treating rectal bleeding will control a certain number of the cases, it is advisable to search thoroughly for the source of the bleeding and then, having found its origin, carry out the proper therapy according to a specific rational plan.[1] The means by which bleeding may occur and the proper treatment for each type are summarized below.

Skin Bleeding.—The proper surgical treatment of most benign anorectal lesions calls for the removal of an adequate amount of skin in order to insure proper drainage and healing. This results in a denuded area that will frequently ooze and bleed from small capillary channels for some time postoperatively, a situation that may be quite alarming to both patient and surgeon at times. Occasionally the trauma of the passage of a stool, an enema tip, or the examining finger will dislodge a protecting clot or ligature on a vessel in the skin edge, resulting in fresh bleeding that fails to stop of its own accord. It is this type of external hemorrhage from small blood vessels that will respond well to the application of dry sterile absorbent gauze, with pressure and is not a very serious problem. When this manner of bleeding persists, however, a thorough investigation of the patient's blood-clot-

1. Cantor, A. J.: Anorectal Surgery: Preoperative and Postoperative Care, Am. J. Proct. 3: 222-226 (Sept.) 1952. Miller, D.: Surgical Emergencies of the Anorectum, Postgrad. Med. 7: 251-252 (April) 1950.

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ting mechanism should be undertaken and immediate steps taken to correct any abnormalities that may be detected.

Bleeding from External Sphincter.—All components of the external anal sphincter are supplied with many small branches of the inferior hemorrhoidal artery. Whenever the sphincter is manipulated or incised during the course of an anorectal surgical procedure, arterial bleeding may therefore be incurred, and, if the bleeding is unrecognized at the time of surgery or activated in the postoperative period, a rapid and serious blood loss will result. If at any time there develops a continuous passage of bright red blood from the anal canal, immediate examination should be undertaken. This type of bleeding, we feel, warrants taking the patient to the operating room, where the proper facilities are available. A topical anesthetic such as dibucaine (Nupercaine), 1%, may be applied to the anal canal prior to the examination. If, however, one is unable to examine the area thoroughly with this simple analgesia and positively identify the source of the hemorrhage, the sphincter and perianal skin is infiltrated with a 1% procaine solution until proper relaxation is obtained. When the offending vessel is found, it is clamped and securely ligated with 00 absorbable surgical suture. No other packing or hemostatic agent is placed in the anal canal.

Internal Bleeding.—Although a moderate amount of bleeding may be expected after most surgical procedures in the anorectal region, the passage of large clots of dark blood, associated with other signs of blood loss, is obvious evidence that hemorrhage has taken place. The rich plexus of hemorrhoidal veins and arteries allow such bleeding to be a serious affair, and valuable time may be lost by indecision. If vascular shock is present or impending, whole blood should be given immediately and preparations for an exploration of the area made in the operating room. When the bleeding is vigorous and the administration of 500 cc. of whole blood does not alter the blood pressure or pulse, a rectal pack as described by Rolens [2] may be placed in the ampulla for temporary tamponade. When the patient is out of shock and able to tolerate an anesthetic, he is transported to the operating room, where a general anesthetic is given. The sphincter is dilated gently, and a search is made for the bleeding vessel. When found, it is suture-ligated with 0 absorbable surgical suture, and no other hemostatic agent is used. There are occasions, and these are fortunately quite uncommon, when the exact source of the hemorrhage is hidden in a subcutaneous or submucosal hematoma, thus making it impossible to ligate a particular vessel. In such an instance, a dumbbell pack may be inserted in the lower ampulla and anal outlet for hemostasis. This packing is left in place for 48 to 72 hours, depending on the severity of the bleeding, and is then cautiously removed after the patient is sedated. A low-residue diet is given to the patient for several days after its removal.

Postoperative bleeding is often an unforeseen mishap, but, by keeping in mind several practical surgical principles, its likelihood may be minimized a great deal. The ligation of hemorrhoidal veins cephalad enough to obliterate the main channel is essential, and the use of a running, locking suture over the hemorrhoidal bed, after the fibers of the external anal sphincter have been carefully dissected away from the overlying tissue, has proved to be the best method of insuring closure of the collateral vessels. Arteries are always individually clamped and ligated. Before any suture or ligature is cut, the strands are relaxed in order to insure that the knot, rather than the tension, has controlled the bleeding. The entire area is inspected at the completion of the operative procedure, and, except to control the external skin edge oozing, pressure packs are not relied upon to produce hemostasis.

EXCESSIVE POSTOPERATIVE PAIN

The etiology of excessive postoperative pain is often obscure and difficult to evaluate because of the frequent interrelationship of functional and true organic elements in its pathogenesis. Tolerance to pain will vary greatly among people, and factors such as fear, insecurity, apprehension, and fatigue may each contribute in some measure to lowering the individual's threshold to pain. We have been impressed with the number of times the psychosomatic manifestation of extreme postoperative pain has had its origin in the fear of malignant disease, and we have often utilized practical bedside psychotherapy with much success in patients who appeared to be suffering from severe and agonizing postsurgical distress. Cooperation and confidence on the part of the patient is often of much more value in the relief of pain than the administration of large doses of the opiates or the injection of the long-lasting anesthetics. There are, however, a number of organic reasons that may account for unusual pain postoperatively, and undoubtedly the majority of these are due to faulty technique at the time of surgery.[3] Clinical experience has verified the correlation between the amount of postoperative pain and the degree of trauma in the anal outlet that the operation requires. Nevertheless, this factor alone is not solely responsible for the development of unusual pain following anorectal surgery. An equally important evaluation would undoubtedly demonstrate the parallel relationship between the amount of distress and the errors in judgment as to that technical undertaking of the surgery. The more important of the factors that may lead to trouble are discussed below.

A factor such as failure to remove an adequate amount of skin distal to the mucocutaneous line results in the presence of edematous and congested tags of tissue that are rich in somatic nerve endings and that interfere with the proper drainage of the operative bed. Inflammation may rapidly develop under such circumstances and add to the pain experienced by the patient. Removal of an excessive amount of skin in the anal canal and outlet or in the perianal margin denudes the external anal sphincter and allows direct irritation of the very sensitive fibers of this muscle. Constriction occurs, and the vicious cycle of pain, spasm, and improper healing begins. Although under voluntary control, the external anal sphincter is one of the most excitable and responsive muscles in the body, and inflammatory or mechanical trauma to its fibers, in addition to being extremely painful, will cause

2. Rolens, M. E.: Control of Hemorrhage Following Anorectal Surgery, Am. J. Surg. **81**: 28-30 (Jan.) 1951.

3. Elkins, R. F.: Pre- and Postoperative Care in Proctology, South. M. J. **46**: 182-184 (Feb.) 1953.

violent and sustained contraction to occur. A high percentage of cases of severe postoperative pain have their origin in sutures and ligatures that are improperly placed about the anorectal area. The external anal sphincter must always be carefully dissected away from the overlying skin, and care must be taken to prevent piercing of the muscle by placing the surgical suture too deeply. Direct vision and palpation are probably the best methods of avoiding this pitfall, and the mass clamping of excessive tissue with bulky ligation can only lead to distress. Although it is not a widely advocated or accepted procedure, there are some surgeons who feel the introduction of an anal pack or plug is necessary for hemostasis after anorectal surgery. It has been our experience that such a procedure invariably results in considerable discomfort and actually does little to promote hemostasis if careful identification and ligation of bleeding vessels is carried out during the course of the operation. A small, soft rubber catheter, placed into the ampulla for 48 hours to allow the escape of gas and facilitate the introduction of a liquid petrolatum enema on the second postoperative day, is the only type of foreign body that we feel is justified. Infection and fecal impaction are common causes for pain, but, since they are discussed elsewhere in this paper, they need only be listed here.

From the observation of the above-mentioned factors, it becomes clear that there is certainly no panacea for the relief of postoperative pain, with the possible exception of administering massive doses of the opiates, during a time when some corrective healing will naturally occur. This, obviously, is not following the principles of sound surgical therapeutics, and it therefore becomes necessary, when one or more of the above-mentioned circumstances is found to be responsible for an excessive amount of pain, to direct one's attention and energy to its eradication. When examination of the area is carried out, it should be kept in mind that somatic innervation reaches only to the mucocutaneous line, and, with the exception of the feeling of fulness, distention, and congestion, severely painful sensations will not originate above this point. The source of the pain, therefore, is not difficult to determine and, when located, should receive active treatment until it no longer remains a focus of irritation.

We have found that for those persons in whom edematous, swollen perianal skin is the basis for discomfort, the use of warm, hypertonic saline packs or salt water sitz baths serves best to relieve the congestion. When the converse is true and excessive skin has been removed, with exposure of the external anal sphincter, liberal use of a 1 or 2% aqueous solution of merbromin (Mercurochrome), which is applied twice daily, acts as a soothing antiseptic that also stimulates rapid epithelization of the defect. Topical anesthetic agents may also be applied, but evidence of local irritation or maceration of the perianal skin should indicate their withdrawal. Infection in the anal outlet or along the suture lines is best handled by the same methods that are used for an infection anywhere else in the body, namely, the application of hot compresses, the administration of the antibiotics or chemotherapeutic agents, and the assurance of adequate drainage. It must be emphasized that a number of the orally administered antibiotics are notorious for the way in which they lead to the development of proctitis or perianal irritation, and, for this reason, it is probably less hazardous to give this type of medication by the parenteral route.

Sutures or ligatures that have penetrated into the sphincter muscle present a difficult problem, which is probably best handled by the local use of anesthetics and the administration of narcotics, until the time when the offending strand can be removed. Contrary to the opinion of some proctologists, we believe that frequent postoperative digital dilations of the anal canal that break up adhesions and prevent sealing of skin edges are helpful in assuring better healing, promoting more adequate drainage, and lessening spasm and irritability of the anal sphincter.[4] We have seen a number of patients in whom disabling postoperative pain has arisen from no other source than an extremely spastic muscle and who have responded dramatically to frequent anal dilations.

For those persons who do not respond to any of the above methods of treatment or in whom pain persists, despite inability to locate an exact source of the distress, either functional or organic, we have resorted, on occasion, to the injection of the so-called long-lasting anesthetic agents. Our enthusiasm for this form of therapy has never been great, for the untoward side-effects that may develop following their use are often more annoying than the condition for which they were utilized. Superficial necrosis, deep abscess formation, local itching and urticaria, and the possibility of systemic reaction are some of the reported and personally observed complications that occur. Nevertheless, the application of long-lasting anesthetic agents to the problem of excessive postsurgical pain is acceptable and often yields gratifying results when all other forms of therapy have failed.

INFECTION

The anal outlet and lower rectum, rich in vascular and lymphatic channels and surrounded by loose areolar tissue, are susceptible to infection in a variety of ways. It is remarkable indeed that in this area, serving as a passageway for the elimination of waste products, containing uncountable millions of bacteria from the intestinal and upper respiratory tract, violent infections are not more frequently encountered after surgical trauma. In all probability there is a certain degree of local tissue immunity that offers resistance to growth of pathogenic organisms, but it is unlikely that this factor alone can protect the patient from developing postoperative sepsis. More fundamentally important is the avoidance of infection by providing at the time of surgery adequate drainage of the traumatized and susceptible area, a principle understood and utilized by proctologists for a great number of years. By establishing free drainage, potentially virulent bacteria, together with their toxic products, blood, serum, and necrotic tissue, pass to the outside and thus are rendered harmless. Contamination is confined to the superficial layers, and involvement of the deeper structures by invading organisms is prevented.

It is logical, therefore, that the inability of the surgical area to drain properly, either because of the blockage of already developed drainage ways by congestion or edema

4. Pontius, G. V.: Treatment of Fissure, Hemorrhoids and Fistula in Ano, S. Clin. North America 23: 255-290 (Feb.) 1943.

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about the anal outlet or because of failure of the surgeon to originally provide sufficiently wide radical incisions for the exit of bacteria, is the most common cause for postoperative infection about the anorectum. Other etiological factors include the inoculation of pathogenic organisms into the deeper tissue by the passage of sutures or improperly placed and buried ligatures; examination or manipulation in the postoperative period with dirty instruments or gloves; irritation, inflammation, and direct invasion of the area by unusually potent diarrheal-producing intestinal or respiratory bacteria; and cutaneous allergy to locally applied antiseptics, anesthetic agents, or foreign materials, followed by diffuse inflammation.

Postoperative anorectal infections may be of several types. The manner in which the responsible organisms are introduced and the nature of the bacteria, of course, determine largely the way in which the infection manifests itself, although such factors as bacterial synergy, availability of culture mediums, and local environmental conditions may also be important. The most common offending organisms are Escherichia coli, Pseudomonas aeruginosa, Proteus vulgaris, and the micrococci and streptococci.[5] Mixed infection is more apt to occur than invasion by a single strain of micro-organisms. Anorectal infection has been classified and analyzed by a number of workers,[6] and it is not our intent at this time to reevaluate the various types of inflammatory processes that may occur in this region. From a surgical viewpoint, however, it is important to point out that the majority of postoperative infections begin either at the anal margin, at the posterior triangular space (Minors), or at the mucocutaneous line, when disruption of its junction results from faulty surgical approximation. The type of infection may range from a simple circumscribed tegumentary involvement to a diffuse, ascending cellulitis or massive ischiorectal or perianal abscess formation. The symptoms and signs of anorectal infection follow the same pattern as those that become apparent in response to an infectious process elsewhere in the body. Chills, fever, and malaise develop early and may be extreme. The latter manifestation, we feel, is quite important in anorectal sepsis, for it probably indicates hepatocellular dysfunction, resulting from the release of septic emboli and toxic products into the portal circulation. Local reaction leads to pain, burning, pruritus, and, quite frequently, tenesmus and dysuria.

Examination should be carried out only after sedatives have been liberally administered. Digital exploration may fail to locate the point of infection, and, if there is any question as to the exact nature of the process, the attending surgeon should not hesitate to insert an anoscope or proctoscope in order to determine the character of the lesion. Treatment consists in application of the principles used to combat infection wherever it may occur. Rest, assurance of a proper state of hydration, adequate vitamin intake (especially that of vitamin C), and the administration of the proper antibiotic or chemotherapeutic agent are vitally important. Local therapy is directed toward increasing the vascularity by the application of hot compresses and by the reestablishing of free drainage. When localized abscess formation is discovered, incision is necessary, whether the fluctuation is at the anal margin or above the mucocutaneous junction.

However insignificant the abscess may appear, it is best not to attempt surgical drainage unless proper equipment and lighting are available. These are usually found in the operating room or office primarily arranged to care for patients with rectal disease. Thiopental (Pentothal) sodium given intravenously and combined with 1% procaine solution injected locally has proved to be an excellent anesthetic to use when dealing with this problem, although one must use extreme caution to prevent the dissemination of the infection by introduction of the needle through diseased tissue into healthy tissue. Frequent postoperative digital dilations of the anal outlet are probably the best insurance against faulty drainage, and this procedure is one of the most satisfactory ways to reestablish drainage if infection develops. Rapidly healing skin edges that block exit pathways are spread open, mucocutaneous pockets or sinuses are uncovered, and granulating shelves of tissue are broken down. The intensity of the infection governs the frequency with which the procedure is carried out; if it is repeated every three to five days, however, drainage is assured, healing progresses properly, and the period of convalescence is shortened considerably.

OUTLET STENOSIS

An abnormally narrow opening of the anal canal after surgery for benign anorectal disease may be the result of either removal of an excessive amount of skin without allowing a bridge of epithelium to remain between segments so removed or postoperative infection or inflammation at or below the anorectal junction. In either condition, however, the pathogenesis of the process leading to the stenosis is identical and consists of the deposition of fibrous scar tissue, which replaces the normal tegumentary structures, thus drawing the anal outlet into a fixed and inelastic aperture. Although Bacon [5] has described fibrous trabeculations extending into the superficial fibers of the external anal sphincter, which probably help anchor the scar tissue to the underlying structure, the essential process does not involve the muscle bundle itself. The voluntary and involuntary activity of the sphincter remains intact, but, as a consequence of its being trapped by the core of scar tissue, its ability to dilate in response to the passage of a stool is prevented.

Inflammatory conditions or infection may, in addition to initiating slough and scarring, involve the pectineal fascia, and fibrosis of this structure will eventuate in contracture and compromise in the lumen of the anal canal. Whitney,[7] Abel,[8] and others have given excellent descriptions of this phenomenon and have done much to clarify the importance of the pecten layer. Pain is an important symptom of anal stenosis but is not as commonly experienced as one would suspect. Evidence of outlet obstruc-

5. Bacon, H. E.: Anus, Rectum, and Sigmoid Colon: Diagnosis and Treatment, ed. 3, Philadelphia, J. B. Lippincott Company, 1949.

6. Turell, R.: Hemorrhoidectomy, with Special Reference to Open Versus Closed Technics, S. Clin. North America **32**: 677-686 (April) 1952. Bacon.[5]

7. Whitney, E. T.: Posterior Sphincterotomy, Am. J. Surg. **75**: 761-771 (June) 1948.

8. Abel, A. L.: The Pecten: The Pecten Band: Pectenosis and Pectenotomy, Lancet **1**: 714-718 (April 2) 1932.

tion, as manifested by the necessity to strain during defecation, tenesmus, the passage of ribbon-like stools, and the sensation of incompletely evacuating the large intestine, have been just as frequently encountered in our experience. Cathartics are used uniformly and are often the only means by which the patient can affect a bowel movement. Diagnosis is, in the majority of the cases, established by a careful digital examination of the anal canal, but, in those persons who have an extremely irritable external anal sphincter, it may be necessary to obtain anesthesia before an accurate evaluation of the degree of narrowing can be elicited. Fibrosis and scarring may involve the entire circumference of the anal outlet or only a segment of the wall may be involved. Certainly the most common level is at the mucocutaneous line.

As we have emphasized in some of the preceding paragraphs, we believe that frequent postoperative digital dilations of the anal outlet will prevent too rapid healing of the skin and junctional tissue, and, by thus allowing a certain degree of epithelization to occur, induration will be minimized. As elsewhere where scarring occurs, stretching and massaging aids in softening and relaxing the fibrous bands. In the event that contracture has already developed, it becomes necessary to allow sphincteric relaxation by incision of the binding ring of tissue producing the stenosis. When the stricture involves the lower anal canal below the pectineal line, the best results are obtained by producing several radial incisions, deep enough to completely sever the fibrous ring but never so radical as to involve the underlying fibers of the sphincter ani. No attempt should be made to dissect away a portion of the scar, nor should undermining or removal of wedge-like masses of tissue be undertaken, for, in so doing, the increased trauma leads only to increased hemorrhage and further fibrosis. The incisions should originate well above the zone of the scar and be continued in a caudal and peripheral direction, far enough to insure proper drainage. The number of incisions will depend, of course, upon the degree of narrowing, but sufficient relaxation to allow the introduction of both the forefinger and middle finger to the distal interphalangeal joint should be procured as a safeguard against future contracture. After this procedure, digital dilations are given twice weekly until healing is complete and no further evidence of progressive constriction is present. This may take as long as 8 to 10 weeks postoperatively, and, even at the end of that time, the anal orifice may remain at less than optimum caliber. If the patient is free of pain and has established a fairly normal pattern of bowel habit, it is best for the doctor not to let his enthusiasm provoke him into additional attempts to repair the narrowed outlet, for the risk of increasing the deposition of scar tissue far outweighs the chances of improving the anatomic and functional result.

The dense induration of the pectineal fascia of the anal canal, which frequently develops as an aftermath of infection or trauma to this area after surgery, narrows the outlet in a somewhat different fashion. As the process develops, the subcutaneous tissue beneath the pectineal line draws the anal canal into a fixed diameter, even though there is adequate elastic skin distal to this level. Divulsion of the anal canal as a remedy for this condition is an ill-advised procedure, for the submucosal hemorrhage invariably produced by this maneuver tends only to augment the fibrosis already present, and little or nothing is gained. Incision of the pectineal band in the posterior midline gives immediate relaxation to the anal canal, and normal sphincter tone may then be relied upon to maintain proper anal function. In those people who suffer from excessive irritability of the sphincter mechanism, a posterior sphincterotomy may be carried out at the same time the pectineal fascia is incised. Frequent dilations after this procedure insure proper healing and adequate drainage.

INCONTINENCE

With the possible exception of cancerphobia, the fear of being unable to control the passage of gas and fecal material from the rectum is uppermost in the minds of all persons facing anorectal surgery. There is not only a natural apprehension to submit oneself to a surgical procedure upon an area the proper function of which is necessary for unqualified social acceptance, but the number of rumors, half-truths, and sordid tales of "loss of control" following surgery of the anorectum are quite numerous among those who suffer from disease of this area. Unfortunately, these stories too often contain more than a small degree of fact, a situation that offers support to the reluctance and aversion of those people afflicted with anorectal disorders to seek surgical remedy for their distress. Certainly, one cannot ridicule the indisposition of those who delay undergoing treatment when they harbor the anticipation that the price they may have to pay for relief is the terrible plight of finding themselves unable to regulate the exit of material from the large intestine.

Anal incontinence is most commonly the consequence of laceration of the sphincter muscles at the time of surgery, with faulty healing of the incised or divulsed fibers. The degree of dysfunction is for the most part dependent upon the proportion of the muscle so transected, although this factor alone does not always account for the relative extent of seepage or soiling. Comparatively minor injuries may heal with enough disruption of the anal canal to cause embarrassing symptoms, yet deeper and more extensive trauma, which mends in a kindlier manner with a more satisfactory approximation of the loose muscle bundles, will occasionally result only in a predicament of equal severity. The degree of muscle continuity, however, remains as the most important factor in preserving anal continence. Various gradations of dysfunction, ranging from some weakness in voluntary activity when the subcutaneous portion of the external sphincter is divided to complete inability in preventing the escape of the intestinal contents when all components of the muscle are involved, may be encountered.[9]

Often overlooked by the proctologic surgeon is the danger that postoperative incontinence may be initiated by excessive stretching of the sphincter ani during the operative procedure. It is interesting to note that the anal sphincter is one of the last muscles of the body to become relaxed under the influence of a general anesthetic. By excessive dilation before complete relaxation is obtained, the hasty or unwary operator may so exhaust the muscle

9. Blaisdell, P. C.: Plastic Repair of the Incontinent Sphincter Ani, Am. J. Surg. **79**: 174-183 (Jan.) 1950. Fansler, W. A.: The Repair of Anorectal Incontinence Following Operation for Fistula, South. M. J. **45**: 229-232 (March) 1952.

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fibers that their normal tonicity is decreased considerably and the voluntary influence on anal function is rendered ineffectual. Varying degrees of incontinence may also follow mechanical distortion of the anal canal, quite independent of muscle injury, as a consequence of faulty approximation of the mucocutaneous junction, development of mucocutaneous fistula, or the presence of scarring and stenosis of the outlet. Although in the strictest sense these conditions do not alter the ability of the sphincters to close the terminal portion of the intestine, they do represent circumstances that allow uncontrollable leakage and discharge, much against the patient's will. The problem can be dispatched, however, and normal function reestablished when the basic disturbance is corrected. When one considers the anatomic features of the anal sphincter mechanism, it becomes evident that, when muscle bundles have been severed and the ends have retracted, the anal outlet will be lost to voluntary influence, and, regardless of how the area between the parted fibers becomes replaced, fecal material and gas will escape freely. Surgical reapproximation of the muscle ends or, at least, re-creation of peripheral continuity of the sphincteric elements, is therefore absolutely essential in order to provide the distorted tissue with the ability to function normally as a constricting regulator for the passage of intestinal contents.

The exact manner in which surgical correction of the anal distortion is accomplished will depend upon the nature and severity of the decompensation. Although a tedious and painstaking undertaking, the careful dissection of the frayed fibers from the scar tissue mass that renders them useless and a direct end-to-end approximation of viable muscle probably offers the greatest chance for restoration of sphincteric function. Overcorrection of the defect should be the objective of the operator, yet extreme caution must be exercised lest an excessive amount of tissue be removed, a natural temptation and often an unavoidable hazard. Mattress sutures of absorbable surgical suture serve well in this type of repair. Some workers have advocated the use of imbrication or "reefing" of the scarred or everted segment of the anal wall, especially in those cases in which the hiatus type of distortion is present, with a funnel-like deformity of the anal margin and prolapse of the mucosa. This procedure has special merit in those cases of long-standing incontinence, or when a considerable amount of muscle tissue has been lost, either through previous attempts at repair or through infection with slough—cases in which the risk of further loss of available functional muscle is appreciable. The utilization of fascial strips, wire sutures, and muscle transplants to support the anal outlet have all been attempted, and there is no doubt that each of these techniques has clinical applicability in certain cases. Plastic repair of the severed sphincter ani is often a disheartening problem, taxing both the skill and the patience of the surgeon, and yet a problem in which fastidious attention to even the most minor detail will yield satisfying results.

The people in whom a postoperative atonic sphincter mechanism leads to an annoying leakage of rectal contents, resulting in soiling and perianal irritation, in the absence of disease of the nervous system, respond well to sphincteric exercise. The patients are instructed to voluntarily contract the anal musculature 50 to 100 times every four to six hours during the day. It is gratifying to observe that the most skeptical recipients of this advice are not infrequently the ones in whom the optimum results are obtained.

MUCOCUTANEOUS FISTULA

It is oftentimes astonishing to observe the rapidity with which the tegumentary layers of the anal canal and perianal margin heal after surgical trauma. Epithelization of denuded areas begins almost immediately and progresses at a faster rate than does the repair of the underlying tissues. While this apparently natural law of regeneration would appear to hasten the period of recovery following surgery of the anorectum, its effect is quite the contrary, and, unless the surgeon utilizes some means to retard the speedy overgrowth of the cutaneous layers, a less than desirable result will frequently be obtained. The uniting of the skin level, prior to the granulation and proliferation of the subcutaneous structures, allows the development of a tunnel-like defect, an arrangement that lends itself readily to the formation of abscess tracts and fistulas. As the most cephalad border of the squamous and transitional epithelium is at the level of the mucocutaneous junction, it is at this point that the inner opening of such a sinus will be found. A mucocutaneous fistula, serving well as the nidus for bacterial growth and inflammation, must therefore be avoided if possible or promptly eliminated when discovered.

The best method of preventing the occurrence of mucocutaneous fistula is to repeatedly dilate the anal outlet and, in so doing, break down whatever epithelization has taken place during the period when the subcutaneous defect is being replaced by normal granulation tissue. In those persons who harbor some degree of proctitis prior to surgery and in whom longer than average drainage is essential in the postoperative period, we have sutured down the epithelial edges to the underlying tissues with fine absorbable surgical sutures, as a means of retarding its growth. Some men have advocated the use of chemical irritation of the raw surfaces in order to devitalize the cells, with the same objective in mind. In addition to the painful sequelae of this technique, however, there is the question of whether the application of irritating materials will stimulate rather than discourage the growth of new cells. When mucocutaneous fistula is discovered in the period before fibrosis and secure healing of the bridging skin have taken place, the tract can generally be spread open by firm pressure of the examining finger tip. If this method fails to completely expose the pathological channel, a topical or local anesthetic should be given and incision of the scar carried out. A small, curved blade, introduced into the upper opening and drawn out along the course of the fistula, is an excellent and accurate way to correct the problem. Persistent dilation until healing is completed in the desired fashion must be undertaken in all cases.

ALTERATION OF MUCOCUTANEOUS JUNCTION

The most important landmark in the anal canal is the mucocutaneous line, and preservation of its normal relationship to the anal outlet is a vital part of any procedure carried out in this portion of the intestine. Disruption of its margin following surgical trauma is the underlying

mechanism responsible for the development of annoying complaints in the postoperative period. Probably the most frequently observed disturbance in anal function that can be traced to an alteration in the mucocutaneous relationship is the constant seepage of mucus and fecal contents of the lower rectum. This disheartening symptom occurs when an ectropion-like protrusion of secreting mucosa presents into the lower anal canal, the consequence of the surgeon's failure to approximate the dentate margin in a circumferential manner. The reverse of this may also develop, in which squamous or transitional epithelium is inadvertently brought up higher than the lower border of the mucous membrane, resulting in imbrication and retraction of the area so involved. Irregularities of this nature lead to imperfect closure of the anal lumen notwithstanding normal sphincteric function. The derangement of the adjacent crypts, papillae, and anal glands, because of the alteration in their anatomic position, invites the development of irritation and infection at the point of their distortion. Sloughing may occur and ulceration persists in spite of the most vigorous application of the usual supportive measures to combat bacterial invasion. Pain, spasm, and irritation complete the cycle of dysfunction and discomfort to the patient. Anoscopic examination will reveal the segment of everted or retracted mucosa, often surrounded by edema, erythema, and infection, and, in many cases, ulcerated patches of the anal wall may be demonstrated.

In the presence of severe, mixed hemorrhoids it is consistently difficult to place the mucous and squamous layers in proper and accurate apposition after the pathological tissue has been removed. At times an excessive amount of the protuberant clusters of internal hemorrhoids may be removed, thereby making it impossible to reattach the distal edge of the mucosa at the correct level. We have found that by slowly drawing out a gauze sponge that has been packed into the ampulla the degree of laxity of the internal hemorrhoidal mass can be better appreciated as the mucous membrane is prolapsed. Incision to the mucocutaneous line is always made by scalpel rather than by scissors, and hemostatic crushing clamps are never applied to the mucosa with tension at their edges. Incorporation of these measures into the technique of hemorrhoidectomy will reward the surgeon with a decided decrease in the number of complications at the mucocutaneous verge. Although conservative measures, involving the administration of the antibiotics, repeated digital dilations, and local application of cauterizing solutions, will occasionally be of benefit to the patient, the expeditious way to terminate the difficulty is to return the patient to the operating room and surgically correct the defect by excising the involved portion of the wall, freeing up the retracted or everted tissue, and reestablishing the continuity of the mucocutaneous line at the proper level. The postoperative management is then identical with that of any other simple anal plastic procedure.

PRURITUS

The problem of anal pruritus is a broad and intricate subject, and a voluminous amount of literature has accumulated concerning its etiology, pathology, and therapy. It is not our intention to review the many aspects of the disease, for that task has been completed by a number of writers, and their monographs need no improvement. It is pertinent to this discussion to consider, however, the occasional patient in whom the development of a pruritic state can be directly traced to the period following surgery for benign anorectal disease. When such a postoperative history can be definitely elicited, it offers every reason for encouragement to the physician, accustomed to treating this oftentimes disheartening problem, for it indicates in almost every case a definite etiology for the distress, devoid of the deep-seated emotional implications often found in the average patient with pruritus. The specific cause for the postoperative complaint is almost universally based upon either (1) a mechanical defect in the anal outlet; (2) the presence of a low-grade infection, persisting from the time of the operative procedure; (3) allergic phenomenon, initiated by the application or injection of antiseptic or anesthetic solutions; or (4) a combination of any of the foregoing.

The real difficulty in diagnosis arises as a consequence of the inflammatory dermatitis produced by constant scratching of the area and the continuous application of various ointments and creams to combat the torture of the itching perianal skin. The basic pathology is so often distorted by the secondary reaction that it cannot be determined until definite measures are taken to eradicate the maceration, edema, and weeping of the involved tissue. We have found that the simple regimen of sedatives, local application of nothing more than 0.5% aluminum subacetate solution three times daily, and clear instructions for the maintaining of a clean and dry anal outlet have satisfactorily controlled the irritation in almost every instance. In some of the more refractory cases we have resorted to the application of 1 or 2% hydrocortisone acetate, with excellent healing. A diligent search can then be undertaken for possible mechanical factors that may be responsible for aggravating the perianal itching, and proper measures can be carried out for their correction. The preceding paragraphs have enumerated and analyzed the various types of deformities that may result in a pruritus ani, and there is no further reason to evaluate them at this point. The infective and allergic states that lead to pruritus in the postoperative period are more often than not cleared up by conscientious adherence to the plan of treatment mentioned above. There is, occasionally, a need for a broader plan of therapy in those people who are suffering from a severe infection or abscess, involving the utilization of heat, antibiotics, and drainage. Restoration of normal anal anatomy and function will invariably relieve these patients of any further pruritus.

ANAL ULCERATION

An area of erosion in the anal canal after operative trauma is the manifestation of a localized focus of infection, resistant to the usual pattern of healing and epithelization. Ulcerated areas may be found in any position about the anal circumference but are much more common in the posterior midline. There is a definite and understandable reason for this, dependent upon the anatomic configuration of the external anal sphincter, the superficial component of which courses in a converging manner to the anococcygeal raphe deep to the subcutaneous circular fibers. The Y-shaped compartment thus

delineated by this relationship is known as the posterior triangular space and is potentially an ideal location for invasion by infecting organisms from adjacent tissue. If the area is invaded, abscess formation or sloughing of the anal wall covering the recess, with persistence of a necrotic, irregular ulcer in the posterior midline, results. Lateral or anterior ulceration may also develop, but such an occurrence is relatively uncommon, and involvement in these quadrants is generally at the anorectal line as a consequence of surgical disruption of this structure. Suture material will frequently act as a foreign body focus for granuloma formation and secondary erosion.

Once again, the importance of proper removal of tissue and the providing of adequate pathways for the drainage of traumatized tissue about the anorectum must be emphasized at this point. For in almost every instance, and the importance of this concept could well tempt one to say "every instance," postoperative anorectal infection and ulceration originate and progress in tissue that has not been allowed to drain amply. Sufficient skin must always be removed in order to retard healing at this level and to prevent blockage of the drainage channels before the mucosa has united and potentially susceptible areas for infection remain. Repeated dilations are added insurance that such will not take place. If septic products are permitted to flow to the outside freely, there is little danger that the posterior triangular space or the mucocutaneous junction will become infected or ulcerate. Until the mechanical defects that have preceded the infection have been corrected or until drainage has been provided, the ulcerations will remain resistant to conservative therapy. It is logical and wise to resect the ulcer-bearing tissue at the time of the secondary procedure, for, in so doing, minimal scarring and contracture of the anal canal will ensue.

SUMMARY AND CONCLUSIONS

Complications following surgery for benign anorectal disease still occur too frequently. These not only may be annoying or even disabling but if allowed to persist may result in suspicion and mistrust in the mind of the patient. Some of the complications are observed in the early postoperative period; these are fecal impaction, bleeding from the operative site, infection, and excessive pain. The development of any one or more of these conditions is likely to delay or prevent proper healing, resulting in eventual anal function that is less than satisfactory. Other factors that complicate normal convalescence and recovery become evident later in the postoperative period; stenosis of the anal outlet, incontinence, fistula formation, or disruption of the mucocutaneous junction are the most important of the later sequela. Unless these can be avoided, surgical correction may be necessary.

There are several means by which complications may be reduced or eliminated. A closer attention to the restoration of the normal configuration of the anal outlet is essential. The provision of adequate pathways for drainage must never be overlooked. Frequent postoperative rectal digital examinations, in addition to assuring better healing by promoting drainage and preventing the formation of excessive scar tissue, have also proved to be the best means of recognizing trouble before it becomes a serious threat to the patient's welfare.

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SURGICAL TREATMENT OF NONCALCULOUS BILIARY TRACT DISEASE

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Unsatisfactory results of cholecystectomy for noncalculous cholecystitis are a frequent occurrence. Errors in diagnosis and incomplete surgical procedures are believed to be the cause of some of these failures. The purpose of this report is to discuss surgical methods for improving the results of treatment of noncalculous biliary tract disease. Cole [1] reports that 50% of gallbladders removed in the United States are noncalculous. Maingot [2] states that less than 25% of patients are free of symptoms after cholecystectomy for noncalculous gallbladder disease. Snodgrass [3] found 64% poor surgical results in this group. Bockus [4] says that colic occurs in one-third of patients with symptoms due to chronic cholecystitis without stones. Presuming these estimates are relatively accurate, one is impressed by the large number of patients who are chronically ill from noncalculous biliary tract disease or are disabled by pain after removal of their gallbladder.

A regrettable tendency to teach young surgeons that biliary tract operations should be reserved for patients who have evidence of gallstones does not take into account those individuals who have fixed noncalculous organic disease that cannot be corrected by conservative treatment. A laudable trend to exploration of the common bile duct at the time of cholecystectomy in an increasing percentage of cases is evident from current surgical literature. The chief purpose of common duct exploration in most reported series has been for detection and removal of stones. Such procedures may be followed by persistence of disabling postoperative symptoms when coexisting stenosis or fibrotic stricture at the sphincter of Oddi is overlooked or uncorrected. Obstructive disease of the cystic duct with associated infection and abnormal function of the gallbladder can be treated with good results by cholecystectomy and removal of the cystic duct, provided the disease process is limited to these structures. When obstructive disease of the common bile duct coexists with cholecystitis a good result cannot be anticipated from cholecystectomy alone.

1. Cole, W. H., and Elman, R.: Textbook of General Surgery, ed. 4, New York, D. Appleton-Century Company, Inc., 1944, p. 622.

2. Maingot, R.: Abdominal Operations, ed. 2, New York, Appleton-Century-Crofts Company, Inc., 1948, p. 675.

3. Snodgrass, T. J.; Munn, W. A., and Flarity, T. H.: Surgery of the Gallbladder: Study of the Results of Surgical Treatment in Rock County, Wis., Arch. Surg. **61**:199-210 (Aug.) 1950.

4. Bockus, H. L., and others: Gastro-Enterology, vol. 3, Philadelphia, W. B. Saunders Company, 1946, pp. 565-577.

Evidence of obstruction is found at operation most often at one or both of two key points in the biliary tract; these are the cystic duct and the terminal portion of the common duct (fig. 1). Biliary hypertension and stasis from impaired drainage due to hypertrophic stenosis or fibrotic stricture at the sphincter of Oddi is associated with degenerative changes in the pancreas because of the common channel for the pancreatic duct and common bile duct controlled by a single sphincter in most individuals. Reflux of pancreatic juice into the biliary tract and reflux of bile into the pancreatic duct can occur from obstruction at the sphincter of Oddi. Resulting chemical inflammatory reaction and recurrence or persistence of stenosis at the choledochoduodenal junction favors chronic ascending infection. Thus, a chronic progressive process characterized by cholangiohepatitis,

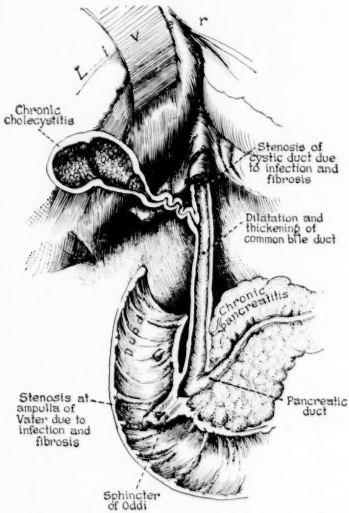
Chronic cholecystitis
Stenosis of cystic duct due to infection and fibrosis
Dilatation and thickening of common bile duct
Chronic pancreatitis
Stenosis at ampulla of Vater due to infection and fibrosis
Pancreatic duct
Sphincter of Oddi

Fig. 1.—Chronic infection and fibrotic constriction causing impaired drainage due to stenosis at the cystic duct or the sphincter of Oddi.

cholecystitis, and chronic pancreatitis may eventuate. Adequate surgical treatment for these patients implies not only removal of the diseased gallbladder but also correction of obstructive disease at the sphincter of Oddi.

INDICATIONS FOR OPERATION

The basis for selection of patients with noncalculous biliary tract disease for operation rests upon a concise history of typical recurring attacks of biliary colic and demonstration of reliable objective evidence of biliary tract disease. Preoperative study should attempt to determine the extent and severity of the disease process, which may be limited to the galibladder and cystic duct or may include the common duct, liver, and pancreas. Estimation of impaired hepatic and pancreatic function is helpful in selecting the proper treatment before, during, and after operation. Evidence of cirrhosis or chronic fibrosing pancreatitis may alter an otherwise favorable prognosis. Promise of surgical cure is not justified if prolonged postoperative dietary and medical treatment for nonreversible fibrotic disease of the liver or pancreas may be required, even though one may hope to prevent progression of the disease process in these vital organs by surgical correction of chronic biliary hypertension.

A concise history of typical recurrent biliary colic and x-ray evidence of chronic cholecystitis are considered significant evidence of operable biliary tract disease. Bockus [4] believes that an absent or faint cholecystographic shadow is the most important objective finding in noncalculous cholecystitis. Delay in gallbladder emptying after stimulation by a fatty meal suggests functional or organic disease of the choledochoduodenal sphincter. Mallet-Guy [5] found cholecystography to be of no value for diagnosis of narrowing or fibrosis of the sphincter of Oddi. Sodium iodipamide (Cholografin), a new intravenously given contrast medium in 20% solution, is helpful in visualization of bile ducts. Abnormal dilatation of the common bile duct may be shown, though the cause is not usually apparent from films made by this method. X-ray studies are of no value in the presence of jaundice or when liver function is impaired sufficiently to cause 20% or more retention of sulfobromophthalein (Bromsulphalein) dye.

Typical attacks of biliary colic of short duration that occur soon after eating, show a pattern of increasing frequency and severity, are often associated with nausea and involuntary vomiting, and are not ameliorated by dietary management suggest operable disease of the pancreaticobiliary systems. A history of chronic dyspepsia and postprandial flatulence frequently precedes by months or years the onset of recurrent biliary colic. Progressive weight loss and vitamin deficiencies may be concomitant findings due to inadequate food intake and subnormal assimilation. Persistence or recurrence of biliary colic attacks after cholecystectomy suggests that removal of the gallbladder may have been an incomplete operation. Retained infected stump of cystic duct, overlooked stone in the common duct, chronic pancreatitis, unrecognized and uncorrected hypertrophic stenosis or fibrotic stricture at the sphincter of Oddi should be suspected as possible causes of pain after Cholecystectomy. Long-continued use of an indwelling common duct T-tube can cause chronic irritation with infection and fibrotic thickening of the duct, which may eventuate in late stricture formation after the T-tube has been removed.

Fever, chills, and clinical jaundice are uncommon after biliary colic due to noncalculous disease. Transient mild jaundice and low-grade fever may follow severe noncalculous colic due to cholangiohepatitis or extrinsic pressure on the distal portion of the common duct from enlargement of the head of the pancreas. Pancreatic enzyme levels in blood and urine are usually not elevated in patients with chronic pancreatitis. Tenderness high in the midepigastrium during and shortly after an attack of biliary colic suggests pancreatic involvement when it is associated with percussion tenderness at the left costovertebral angle. Muscle guarding without rigid-

5. Mallet-Guy, P.; Feroldi, J., and Micek, F.: Disease of the Sphincter of Oddi: Analysis of 70 Observations Collected from Dec. 7, 1945 to July 5, 1949, Lyon chir. 45: 181-199 (Feb.-March) 1950.

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ity in the epigastrium is common during an attack. Except in acute cholecystitis, the gallbladder is not palpable or tender. A tender enlarged liver may be due to ascending infection and cholangiohepatitis. Angina pectoris, cardiac arrhythmia, and evidence of coronary atherosclerosis may coexist with biliary hypertension, especially in patients with the cholesterosis diathesis. Diabetes mellitus is a common associated finding in this group, though advanced fibrotic disease of the pancreas can develop without hyperglycemia or glycosuria. Obesity and coronary atherosclerosis do not contraindicate operation for organic biliary disease. Anginal attacks not induced by exertion may be relieved by interruption of deleterious autonomic viscerocardiac reflexes through surgical correction of biliary hypertension.

A typical attack of biliary colic that can be promptly relieved by inhalation of amyl nitrite or the sublingual application of a glyceryl trinitrate (nitroglycerin) tablet suggests that hypertrophic stenosis or spasm of the sphincter of Oddi may be preventing the normal flow of bile and pancreatic juice. Relief of pain by antispasmodics does not usually prevent or delay future similar attacks. In such individuals an injection of morphine may reproduce a typical attack of colic, presumably from spasm of Oddi's sphincter caused by morphine. Cholesterin crystals, pus cells, and pathogenic bacteria are demonstrable in fresh specimens of bile obtained by duodenal tube drainage when obstructive biliary tract disease exists. Twiss [6] believes the presence of colon-typhoid group and streptococcic organisms in duodenal bile is dependable evidence of biliary tract infection if there is free hydrochloric acid in the gastric juice. Chronic infection and back-pressure produce the visible changes of dilatation and thickening of the common duct found in these patients at operation.

The degree of functional impairment of the liver and pancreas in patients with biliary tract disease is difficult to determine by laboratory procedures. Results of chemical and enzyme tests show significant evidence of insufficiency and decompensation only in those patients who have advanced parenchymal damage. Intractable hypoprothrombinemia and sulfobromophthalein retention of 20% or more are indicative of serious degenerative change in the liver which may not be reversible after surgical correction of biliary tract obstruction. The normal liver has excellent regenerative ability.[7] Biliary obstruction and cirrhosis act to repress regeneration, though metabolism of protein and carbohydrate may remain normal for some time.

Patients with a concise history of frequent, recurring biliary colic and objective evidence of biliary tract disease often require operation for relief but should be given a trial of conservative treatment. Those in whom the symptoms and findings are not relieved by dietary management, antacids, antispasmodics, and anticholinergic medication should not be denied relief by surgical treatment.

6. Twiss, J. R.; Carter, R. F., and Fishman, B. S.: Infection in Chronic Cholecystitis: Review of 259 Operative Cases with Preoperative and Postoperative Duodenal Drainage Studies, J. A. M. A. **147**:1226-1231 (Nov. 24) 1951.

7. A Textbook of Surgery, by American authors, Christopher, F., ed. 5, Philadelphia, W. B. Saunders Company, 1949, p. 1127.

DIFFERENTIAL DIAGNOSIS

Certain conditions that simulate biliary tract disease or coexist with it can usually be detected by a careful history, physical examination, and appropriate laboratory procedures. Peptic ulcer may mimic the symptoms of biliary tract disease and is usually revealed by barium x-ray studies. Posterior penetrating duodenal and gastric ulcers that involve the underlying pancreas can cause back pain and tenderness at the left costovertebral angle. They are not to be mistaken for similar symptoms and findings due to chronic pancreatitis. A preoperative diagnosis of early malignancy in the pancreas and stomach is difficult to establish by our present methods.

Small nonreducible epigastric hernia that may be overlooked on physical examination can be the cause of digestive symptoms suggesting gastric or biliary tract disease. In the absence of intra-abdominal disease, repair of the hernia will frequently relieve the digestive complaints. Symptoms of esophageal hiatus hernia may simulate symptoms of biliary tract disease. The hernia is best identified by barium x-ray studies. Back pain and tenderness due to a stone or infection in the left kidney is to be differentiated from symptoms due to chronic pancreatitis. The cause of back pain due to segmental neuralgia, protruded intervertebral disk, spinal arthritis, or metastatic malignancy of the vertebrae is established by history, neurological examination, and appropriate x-ray studies.

Substernal or precordial pain associated with attacks of biliary colic suggests coronary artery disease. Patients with cholesterosis diathesis who have chronic biliary tract disease are subject to attacks of myocardial ischemia from autonomic reflex coronary constriction. Angina pectoris, cardiac arrhythmia, coronary atherosclerosis, or myocardial infarction are detected by physical findings and electrocardiography. Anginal attacks not related to physical exertion suggest the pain may be due to autonomic reflex of biliary tract origin. Marked improvement in the cardiac status of these individuals can be obtained by surgical correction of organic biliary disease. Symptomatic hepatomegaly due to congestive heart failure is to be differentiated from the enlarged tender liver of cholangiohepatitis. Elective biliary tract operations should be postponed in the presence of recent myocardial infarction or untreated cardiac decompensation.

Duodenal diverticulum is infrequently the cause of symptoms. Coexisting biliary disease that may be the cause of complaints should not be overlooked. Duodenal diverticulum is considered the cause of symptoms if bleeding occurs or ulceration in the sac can be demonstrated by x-ray studies. Postoperative peritoneal adhesions do not usually cause pain unless they produce mechanical interference with normal gastrointestinal peristalsis. Pain in the upper abdomen ascribed to adhesions may be due to unrecognized biliary tract disease, peptic ulcer, or carcinoma. Abnormal gas distention of the colon can result from chronic constipation or partial obstruction by tumor.

Psychoneurosis and drug addiction may exist as the sole cause of symptoms or be associated with organic biliary disease. Frequent recurrence of biliary colic and inability to eat an adequate diet can lead to the develop-

ment of a superimposed psychoneurosis or addiction to narcotics. Evaluation of such problems by a qualified psychiatrist may be helpful in determining the proper course of treatment. Rapid recovery from narcotic addiction and relief of psychoneurotic symptoms may follow surgical correction of biliary tract disease that is causing pain. Such patients should not be denied operation when there is reliable objective evidence of biliary tract disease. In our experience, a woman who had been given five electroshock treatments by a qualified psychiatrist without improvement in her psychoneurosis was apparently cured by operation that relieved her abdominal pain.

INDICATIONS FOR EXPLORATION OF COMMON BILE DUCT

Preoperative evidence of biliary tract disease may not be supported by operative findings. Conversely, more serious and extensive disease may be discovered at operation than was suspected. For these reasons only direct evidence found at operation should guide the surgeon in selection of the proper procedure in each case. The coexistence of two or more of the conditions discussed below revealed at operation are believed to warrant exploration of the common bile duct.

An opaque thickened common duct wall results from chronic infection and fibrosis. The wall of a normal common duct is thin, translucent, and bluish in color, resembling the color and resiliency of a normal gallbladder. Diameter of the common duct that is greater than 7 mm. results from obstructive disease distal to the dilated portion. Normal diameter of the choledochus is stated by Gray [8] to be equivalent to the diameter of a goose quill. Increased viscosity, dark color, turbidity, pus, or granular sediment in common duct bile is evidence of stasis and infection. Bile aspirated from the common duct via a needle introduced through the wall of the cystic duct is normally clear, of low viscosity, and has a light golden honey color.

Thickening, edema, or nodular fibrosis of the pancreas associated with a thickened or dilated common bile duct is presumptive evidence of obstructive lesion at the sphincter of Oddi. Only one of five clinical types of pancreatitis is due to reflux or back-pressure phenomenon as reported by Saint.[9] Chronic pancreatitis is probably not secondary to biliary tract disease when a normal common duct is present. Doubilet [10] states that 60% of pancreatitis is due to reflux of bile. The finding of cholesterolosis cholecystitis should alert the surgeon to the possibility of stenosis or dyssynergia of the sphincter of Oddi. A yellowish cholesterin deposit over the gallbladder mucosa is frequently associated with cholangiohepatitis and chronic pancreatitis. A thickened contracted gallbladder indicates long-standing infection and is frequently associated with disease disseminated to other parts of the hepatopancreatic system. It is more common in the older age group and should arouse suspicion of a stone in the common duct even though none is found in the gallbladder. Cole [11] reports that there is no jaundice in 45% of cases in which stones are found in the common duct. Jaundice, past or present, with a diseased gallbladder and common duct may be associated with a stone pocketed at the ampulla of Vater.

A dilated cystic duct suggests that sediment, sand, or stones previously in a diseased gallbladder may have passed downward into the common duct. A granular sediment or turbidity of gallbladder bile found in conjunction with a dilated cystic duct is presumptive evidence that the disease process also involves the common duct. Objective evidence of stenosis or stricture at the distal end of the common duct is obtained by testing the patency of this portion with a 3 mm. malleable probe. When the common duct is found to be dilated and thickened, this procedure is done through an opening in the cystic duct, through incision made in the supraduodenal portion of the common duct, or by retrograde approach through incision in the second portion of the duodenum. Information obtained from manipulations through the cystic duct or supraduodenal portion of the common duct is less reliable and carries the risk of injury to the distal part of the duct. Passage of the probe under direct vision through the papilla of Vater by transduodenal retrograde approach is preferred.

SURGICAL TREATMENT

Preoperative evidence of noncalculous biliary tract disease is largely presumptive and supplies the indications for operation. Surgical exposure of the involved structures affords access to direct objective evidence of disease that becomes the basis for selecting the surgical procedure to be employed. Inspection and palpation of the abdominal viscera is done when the abdomen has been opened. Special attention is given to the stomach, duodenum, colon, pancreas, liver, and gallbladder for evidence of previously unrevealed tumor or ulcer in these structures. Removal of areolar and fatty tissue from the cystic duct and adjacent supraduodenal portion of the common bile duct by gentle dissection affords unobstructed view and access to these parts.

When indications for exploration of the common bile duct are found, the second portion of the duodenum is mobilized by Kocher's maneuver. A transverse incision is made through the antimesenteric wall of the duodenum at the level of the lower border of the head of the pancreas. The papilla of Vater is located by palpation with the index finger and by observing the point at which bile enters the duodenum when gentle pressure is applied to the common duct. Patency of the choledochoduodenal junction is tested with a 3 mm. probe gently introduced through the papilla. If the sphincter does not permit passage of this probe, incision is made upward through the papilla and sphincter of Oddi with the use of a small fistula probe for a guide (fig 2). Care is taken to continue the incision only to the upper limit of constriction. The common duct is then explored from below upward with forceps, scoops, and probes. Special attention is given to detection and removal of a possible stone pocketed in the ampullary portion of the common duct.

8. Gray, H.: Anatomy of the Human Body, edited by W. H. Lewis, ed. 22, Philadelphia, Lea & Febiger, 1930, p. 1191.

9. Saint, E. G., and Weiden, S.: Studies on Pancreatitis, Brit. M. J. **2**:1335-1340 (Dec. 19) 1953.

10. Doubilet, H., and Mulholland, J. H.: Surgical Treatment of Recurrent Acute Pancreatitis by Endocholedochal Sphincterotomy, Surg., Gynec. & Obst. **86**:295-306 (March) 1948.

11. Cole, W. H.: Recent Trends in Gallbladder Surgery, J. A. M. A. **150**:631-637 (Oct. 18) 1952.

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After retrograde exploration of the common duct, ampulloduodenostomy is accomplished by suturing the edges of the ampulla of Vater to the edges of the duodenal mucosa to form a permanent enlarged opening at the choledochoduodenal junction. The new stoma is tested with 5 to 7 mm. probes and is considered satisfactory if all bleeding has been controlled by the sutures and no evidence of constriction is demonstrable. Continuous unimpaired postoperative internal drainage of bile and pancreatic juice into the duodenum without a T-tube drain is thus obtained. Recurrence of obstruction by late postoperative cicatricial stricture is prevented by the plastic anastomosis between ampulla of Vater and duodenum. Relief of biliary hypertension and improved drainage favors spontaneous subsidence of duct infection and permits recuperation of the damaged liver and pancreas after operation.

The duodenotomy incision is closed transversely in two layers with fine steel sutures. In 83 consecutive transduodenal procedures in which this method of closure was used, there has been no postoperative duodenal fistula from leakage at the suture line. The cystic duct is ligated at its junction with the common duct. Cystic duct and gallbladder are removed. Surgical elimination of sphincter action at the choledochoduodenal junction presumably results in nonfunction of a retained gallbladder as reported by Doubilet.[10] Cholecystectomy is believed advisable in all instances when ampulloduodenostomy is employed. Puestow [12] observes that animals that have a functioning gallbladder have a sphincter mechanism at the distal end of the duct and those that do not have a gallbladder do not have a sphincter.

Immediate results following ampulloduodenostomy are often excellent. Patients who had been unable to eat a normal diet and were disabled by frequent attacks of abdominal pain usually are able to eat a full diet and are free of pain when they leave the hospital. Sufficient time has not elapsed to permit evaluation of final postoperative results in patients who have had this operation. Those in whom clinical evidence of cirrhosis or chronic pancreatic disease is found may require postoperative medical and dietary management. The tabulation summarizes experience in a consecutive group of patients who had operations for biliary tract disease.

Operation	%
Transduodenal retrograde exploration of common duct	53.5
Cholecystectomy for stones	52.9
Ampullodiuodenostomy	30.9
Sphincterotomy	14.1
Clinical evidence of chronic pancreatitis at operation	13.4
Stones removed from common duct	12.9
Ampulloduodenostomy for noncalculous disease	11.6
Cholecystectomy for noncalculous disease	9.0
Postcholecystectomy ampulloduodenostomy	4.5
Postsphincterotomy ampullodiuodenostomy (1 case)	0.6

Much postcholecystectomy disability can be prevented in patients with noncalculous biliary tract disease if associated distal duct stenosis is looked for and corrected when the gallbladder is removed. Cattell [13] believes that fibrotic stricture at the sphincter of Oddi is a common cause of failure following cholecystectomy. Unwarranted or indiscriminate surgical exploration of the common bile duct for which no valid criteria are present is dangerous, meddlesome surgery and cannot be condoned on any pretext. The surgeon who fails to correct organic obstructive disease of the common duct revealed by proper evidence at the time of cholecystectomy is delinquent in his responsibility.

SUMMARY

Reduction in the number of unsatisfactory results following operations for noncalculous biliary tract disease is aided by proper selection of patients for operation and surgical correction of coexisting stenosis or stricture at the sphincter of Oddi when cholecystectomy is done. Transduodenal retrograde exploration of the common bile duct and ampulloduodenostomy are recommended when evidence of obstructive disease is found at the choledochoduodenal junction. This procedure relieves biliary hypertension and affords continuous unimpaired postoperative internal drainage of bile and pancreatic juice without a T-tube drain. Improved internal drainage of the biliary and pancreatic ducts permits spontaneous postoperative clearing of infection and favors recuperation of the damaged liver and pancreas. Unwarranted prolongation of ineffectual medical treatment or procrastination in obtaining surgical correction of fixed organic biliary tract disease shows disregard for a progressive process that may produce serious damage to the liver and pancreas.

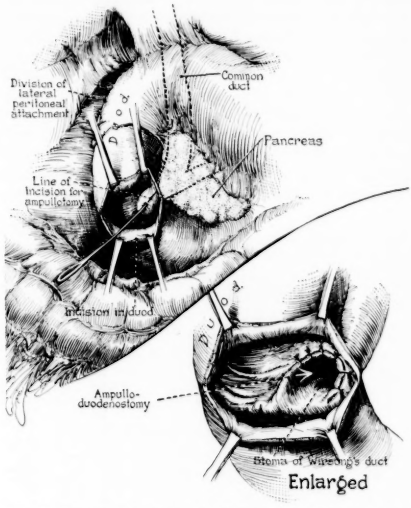

Fig. 2.—Fibrotic stricture of the sphincter of Oddi divided over a slender probe to permit retrograde exploration of the common bile duct. Enlarged diagram indicates plastic construction of a new stoma between the ampulla of Vater and the duodenum for continuous unimpaired internal drainage of bile and pancreatic juice after operation without a T-tube.

600 Delaware Ave.

12. Puestow, C. B.: A Handbook of Operative Surgery: Surgery of the Biliary Tract, Pancreas and Spleen, Chicago, Year Book Publishers, Inc., 1953, pp. 95-96.

13. Cattell, R. B., and Colcock, B. P.: Fibrosis of the Sphincter of Oddi, Ann. Surg. **137**:797-806 (June) 1953.

CLINICAL AND RADIOLOGICAL CORRELATIONS WITH OPTICAL ESOPHAGOSCOPY

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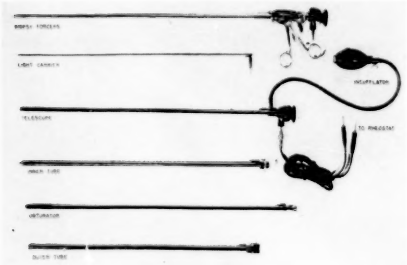
In 1948, Schindler [1] reported the development of a new and safe optical esophagoscope. Two features of this instrument (see figure) offer a distinct advantage over conventional types. The rubber-tipped obturator enables the operator to introduce the instrument safely and easily, avoiding hypopharyngeal injury. The optical system has added a new dimension to the visual observation of esophageal anatomy, function, and pathology. Biopsy specimens are readily obtained. Only minor technical difficulties have been encountered; the most annoying of these is the occasional loosening of the light bulb in the optical system on some instruments, requiring adjustments during examinations. This difficulty has been overcome recently by the introduction of an outer telescopic system. It is the opinion of one of us (S. J. S.) that the length of 46 cm. of the standard instrument is too short and should be extended to 53 cm. There



Optical esophagoscope.

is only one limitation with this instrument. It cannot be used in lesions above the arch of the aorta; however, one of us (S. J. S.) was able to examine a lesion lying just above the arch. It must be mentioned that lesions in this vicinity are uncommon.

Experience with this new instrument has shown that esophagoscopy need no longer be a hazardous procedure attended by the elaborate ritual of the operating room. Instead, it is now a relatively safe and easy office examination. This should inevitably result in a more extensive use of this important diagnostic method. In this paper we wish to report our clinical experience with this instrument during a period of four years from 1949 to 1952 at the Veterans' Administration Hospital in Long Beach, Calif.

From the Gastrointestinal Section of the Medical Service, Veterans Administration Hospital, Long Beach, Calif.

1. Schindler, R.: A Safe Diagnostic Optical Esophagoscope, J. A. M. A. **138**: 885-887 (Nov. 20) 1948.

RESULTS OF STUDY

Esophagoscopy was performed 197 times in 172 patients, of whom 166 were adequately studied and followed so that an accurate final diagnosis was established. These studies included: observation of the clinical course; repeat radiological and endoscopic examinations; endoscopic biopsy; surgical exploration; and autopsy. Our experience has shown that gastroscopy is often a valuable check upon roentgenography and esophagoscopy in cases of early varices and small hiatus hernia. A negative roentgenologic examination cannot be accepted as excluding disease of the esophagus. Of 56 patients in whom x-ray findings were negative, 13 were found to have esophageal pathology upon endoscopic examination: 4 had esophageal hiatus hernia; 3 esophagitis; 2 varices; and one each hiatus hernia with varices, carcinoma, telangiectasia, and extrinsic pressure. Hiatus hernia, esophagitis, and varices are the more frequent lesions that can be negative to x-ray examination. The one case of carcinoma was not disclosed on three separate series of upper gastrointestinal studies, which included fluoroscopic surveys directed at the esophagus. Subsequently, esophagoscopy and properly taken esophagrams demonstrated the lesion. The value of esophagoscopy in disclosing additional pathology that is not apparent from the radiological examination is shown by the finding of esophagitis in 10 cases, in 6 in addition to hiatus hernia and in 2 each in addition to benign constriction and carcinoma. Gastritis was found on esophagoscopy in five patients with hiatus hernia. This emphasizes the frequency of inflammatory complications in cases that are thought to be simple hiatus hernia, carcinoma, or cardiospasm.

Table 1 shows a fundamental disagreement in diagnosis between radiological and endoscopic examinations, in which the latter proved correct. In another 19 cases in which the x-ray findings were positive and esophagoscopic findings negative the latter proved correct; the x-ray diagnosis had been varices in 7 cases; hiatus hernia 4; stricture and filling defect 2 each; and varices or hiatus hernia, cardiospasm, hiatus hernia or ampulla, and irregularity in one each. Outstanding among the disagreements between these two methods is the frequency with which a small hiatus hernia is confused with varices and esophagitis confused with either carcinoma or benign cardiospasm. There was complete agreement between the radiological and the esophagoscopic examinations in a group of 36 patients, 20 of whom had hiatus hernia; 9 carcinoma; 2 each varices and benign stricture; and one each varices with hiatus hernia, cardiospasm, and extrinsic pressure.

On the other hand, table 2 demonstrates a group of nine patients in whom the radiological examination

yielded more reliable information than the endoscopic method. In 10 additional cases a positive x-ray finding proved correct, although esophagoscopic findings were negative. This group included three patients each with diverticulum and hiatus hernia, two with varices, and one each with cardiospasm and stricture. Diverticula and certain instances of varices and small hiatus hernia may be difficult to demonstrate by esophagoscopy and, may be more easily demonstrated by x-ray.

There was a very small but important group of five patients in whom both methods failed to establish the correct diagnosis (table 3). The outstanding lesions that may give this difficulty are early varices and small hiatus hernias. In such instances, gastroscopy provides valuable diagnostic help. The instance in which a foreign body was mistaken for carcinoma was in a patient who swallowed a piece of meat that became adherent to the wall of the esophagus, then became covered by mucus, and appeared grossly like tumor.

TABLE 1.—*Cases of Diagnostic Disagreement Between Positive X-Ray and Esophagoscopic Findings in Which Esophagoscopic Diagnosis Proved Correct*

X-Ray Diagnosis	No.	Esophagoscopic Diagnosis	No.
Hiatus hernia?	2	Esophagitis with stricture	2
Varices	2	Hiatus hernia	2
Irregularity and ulcer	1	Esophagitis with diverticulum	1
Carcinoma	1	Benign stricture	1
Carcinoma	1	Benign stricture with hiatus hernia and esophagitis	1
Benign stricture	1	Hiatus hernia with esophagitis	1
Benign stricture	1	Hiatus hernia with gastritis	1
Eventration of diaphragm	1	Hiatus hernia	1
Cardiospasm	1	Esophagitis	1
Irregularity	1	Varices	1
Hiatus hernia with stricture	1	Hiatus hernia with esophagitis	1
Filling defect	1	Extrinsic pressure	1
Carcinoma and diverticulum	1	Diverticulum	1
Abnormality?	1	Esophagitis	1
Total	16	Total	16

COMMENT

Our experience with optical esophagoscopy clearly demonstrates that whenever disease of the esophagus and the cardia of the stomach is suspected, both the roentgenologic method and the endoscopic method should be used if the highest possible degree of accuracy is to be achieved. The radiological examination should precede esophagoscopy and always include properly taken esophagrams. A fluoroscopic survey of the esophagus in the course of routine upper gastrointestinal studies should never be accepted as an adequate examination of that organ. Furthermore, even an adequate x-ray examination that shows negative results should not be accepted as a sufficient diagnostic study for final exclusion of disease of the esophagus or cardia. If the signs and symptoms point to involvement of this region, an esophagoscopic examination is mandatory.

It is important to emphasize that the two methods of examination are not in competition with each other but are complementary to each other. Esophagoscopy has been found to be superior in the diagnosis of esophagitis, hemorrhagic erosions and gastritis within hernial pouches, telangiectasia, and in certain cases of esophageal varices and hiatus hernia. The x-ray examination, on the other hand, may be superior in the diagnosis of esophageal diverticula and in certain instances of esophageal varices and hiatus hernia. Also, it is important to bear in mind that both methods have their limitations, and the correct diagnosis may not be made until gastroscopy, surgical exploration, autopsy, or further observation. Obviously, the biggest advantage of esophagoscopy is the fact that the examination can be checked by biopsy, and in this regard it is important to emphasize that multiple biopsies and repeated examinations with biopsy may have to be done before a definite diagnosis is established.

TABLE 2.—*Cases of Diagnostic Disagreement Between Positive X-Ray and Esophagoscopic Findings, with Esophagoscopic Diagnosis Incomplete*

X-Ray	No.	Esophagoscopic	No.
Carcinoma?	1	Esophagitis	1
Varices	4	Large folds	4
Cardiospasm	2	Esophagitis	2
Hiatus hernia and diverticulum	1	Hiatus hernia	1
Hiatus hernia and diverticulum	1	Esophagitis	1
Total	9	Total	9

We feel quite certain that such a study as this, with its attendant diagnostic benefit to our patients, would have been impossible without the introduction of this new safe optical instrument for the use of the gastroenterologic internist. We have encountered only one complication in this entire series of 197 examinations, and this was in a patient who developed minor bleeding from esophageal varices as a result of violent retching after the introduction of the instrument.

CONCLUSIONS

Whenever adequate roentgenographic examination fails to settle the diagnosis of esophageal and cardial disease, appropriate endoscopic procedures should be undertaken promptly. In this respect, a negative roentgenogram does not exclude esophageal or cardial disease with certainty. In special situations, gastroscopy is an important adjunctive procedure for the examination of the terminal esophagus and cardia, and, with the use of the newer and safer optical esophagoscopes, the usual delay and reluctance in accepting an important diagnostic procedure should be prevented.

TABLE 3.—*Cases in Which Both X-Ray and Esophagoscopic Diagnoses Were Incorrect*

X-Ray	No.	Esophagoscopic	No.	Correct	No.
Negative	2	Negative	2	Varices	2
Varix	1	Varix	1	Negative	1
Carcinoma	1	Carcinoma	1	Foreign body	1
Negative	1	Negative	1	Hiatus hernia	1
Total	5	Total	5	Total	5

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CLINICAL NOTES

FIXATION OF SKIN FLAPS BY SUBCUTANEOUS SUTURES IN RADICAL MASTECTOMY

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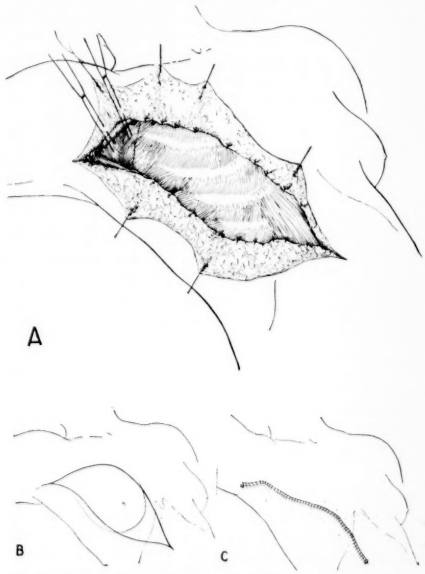
Fixation of the skin to the chest wall and axillary fossa by means of subcutaneous sutures after radical amputation of the breast significantly decreases the morbidity of this operation. It has been long recognized by plastic surgeons that skin must be held securely in place if optimum healing is to be obtained. Following breast amputation, this has been a problem because of the almost constant motion of the chest wall and the depth and irregularity of the axillary fossa. Fixation of the skin to the chest wall and axilla by pressure alone has been only partially successful, although ingenious methods of applying external pressure have been employed.

Halsted,[1] in 1913, advocated fixation of the skin over the axillary vessels by suturing the skin edge to the deep structures. The covering flap was made short, so that the edge was sutured "to the fascia just below the first rib in such a way that the skin partly envelops the large vessels. The thoracic or inner wall of the apex of the axilla is always lined with skin grafts." More recently, Orr,[2] Leighton,[3] Keyes,[4] and others have recommended placing sutures through the skin into the deep structures to fasten the flaps in position. Raffl [5] has applied suction beneath the flaps to hold them more tightly in place. Fixation of the skin flaps by means of subcutaneous sutures has certain advantages over these methods.

Subcutaneous fixation sutures may be used following any type of radical breast amputation. I usually prefer an elliptical incision with the upper limit going obliquely across the axilla toward the posterior axillary fold. This affords a large upper skin flap to close over the axillary region. After the radical amputation is accomplished, the arm is placed in marked abduction and the skin flaps are then simply fixed to the chest wall and axilla by many subcutaneous fine cotton sutures to the deep muscles and fascia (see figure, *A*). From 35 to 50 such sutures are employed. Particular care is taken in covering the axillary vessels by suturing the upper flap first to the remaining clavicular portion of the pectoralis major muscle, then to the chest wall in the region of the first and second ribs, and then to the adjacent deep muscles. The flap is thus pulled high into the axillary fossa, obliterating all the major potential dead space. The arm held in marked abduction facilitates this part of the closure. The remaining flap areas are fixed to the chest wall by subcutaneous sutures placed approximately 5 cm. apart. When all subcutaneous sutures have been placed, the skin edges are close to approximation before the skin sutures are inserted. If the blood supply to the skin edges is excellent, a running lockstitch cotton suture is employed (see figure, *C*). If the blood supply is thought to be impaired somewhat, interrupted skin sutures are usually used. If the skin edges do not meet, split-thickness skin grafts are used to cover the defect. Drains are not inserted unless the chest wall is unusually wet or unless for some reason, a dead space persists. A large pressure dressing is applied, which is removed on the third postoperative day. At this time, the skin flaps are adherent, so a smaller, comfortable dressing is put in place, held by adhesive straps fitted with ties.



A, many subcutaneous sutures are placed into the muscles and fascia to fix the skin flaps in position and fill in dead spaces. *B*, area of incision. *C*, skin flaps are securely fixed in the axillary fossa and on the chest wall.

At this writing, this method of closure has been employed in 25 consecutive radical mastectomies with most gratifying results. Skin slough has been minimal. Pocketing of serum or blood has been unusual, even though drainage has not been employed except in the exceptional case. Extensive early movement of the shoulder has been more easily accomplished with less pain. Postoperative inflammation in the wound has been minimal, and it is reasonable to believe this will decrease the incidence of lymphedema of the upper extremity.

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From the Department of Surgery, Western Reserve University School of Medicine.

1. Halsted, W. S.: Developments in the Skin-Grafting Operation for Cancer of the Breast, J. A. M. A. **60**: 416 (Feb. 8) 1913.

2. Orr, T. G., Jr.: Incision and Method of Wound Closure for Radical Mastectomy, Ann. Surg. **133**: 565 (April) 1951.

3. Leighton, W. E.: Technic for Radical Mastectomy, Arch. Surg. **61**: 312 (Aug.) 1950.

4. Keyes, E. L.; Hawk, B. O., and Sherwin, C. S.: Basting Axillary Flap for Wounds of Radical Mastectomy, A. M. A. Arch. Surg. **66**: 446 (April) 1953.

5. Raffl, A. B.: Use of Negative Pressure Under Skin Flaps After Radical Mastectomy, Ann. Surg. **136**: 1048 (Dec.) 1952.

AURICULAR FIBRILLATION FOLLOWING PROLONGED USE OF THYROID EXTRACT

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Thyroid is administered in large quantities, in most instances unnecessarily, to patients all over the world. The extent to which the empirical use of such medication may be carried is shown in a recent article on the treatment of subdeltoid bursitis in which the author states, "The internist should review the patient generally and possibly prescribe thyroid or other hormones which in some instances appear to be effective."[1] In most cases no great harm results from such medication. Among the harmful effects that may result, particularly after prolonged administration of large doses, auricular fibrillation is most uncommon. The following case is therefore presented.

REPORT OF A CASE

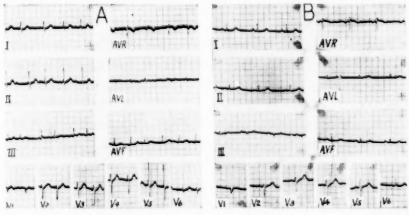
A 53-year-old female was referred for cardiac survey on Nov. 3, 1952. Her occupation required that she walk about most of the day. She stated that she had had intermittent, mild swelling of the ankles toward the end of the day for the past 20 years. About four weeks previously this swelling began to involve the legs as well as the ankles. There were no other cardiac symptoms. During this four week period she had received two injections of a mercurial, with considerable lessening of edema and weight loss each time. In 1946 she had sought treatment for mild obesity. Her basal metabolic rate at that time was reported as -10%. Therapy with 3 grains (0.2 gm.) of thyroid daily was started, and she had continued to take thyroid without interruption for six years prior to the date of examination. History was otherwise irrelevant.

Physical examination revealed a white female weighing 110 lb. (49.9 kg.) who did not appear acutely or chronically ill. Color was good and skin clear, not dyspneic or cyanosed. The throat was normal, and no adenopathy was revealed. The thyroid gland was not enlarged, and there was no exophthalmus. No neck vein distention was observed, and the eyegrounds were normal. There was a very fine tremor of the hands. The heart was not clinically enlarged. Blood pressure was 140/80 mm. Hg, and there was a grade 2 systolic murmur at the apex, not transmitted or influenced by change of position or exercise. The cardiac rhythm was grossly irregular, with a rate of approximately 100 beats per minute. The lungs were clear, the abdomen was normal, and there were no neurological findings. There was a 1 to 2+ pitting edema of both legs. Fluoroscopy revealed clear lung fields and normal cardiac contours. The urine showed a specific gravity of 1.022 and was negative for sugar and albumin. The red blood cell count was 4,600,000 per cubic millimeter and the white blood cell count 6,500 per cubic millimeter. The dimensions of the heart shadow as measured on a 6 ft. teleroentgenogram were within normal limits. A right oblique film taken after barium swallow revealed a normal left auricle. An electrocardiogram (see figure, *A*) revealed auricular fibrillation. There were no abnormalities of the ventricular groups diagnostic of myocardial disease.

The patient was placed on a low-salt diet and therapy with ¼ grain (15 mg.) of phenobarbital three times a day. Use of thyroid was stopped. The edema diminished progressively and completely disappeared within two weeks. On Dec. 12, 1952, the patient stated that she felt well, and it was noted that her cardiac rhythm was regular. The systolic murmur noted at the first examination had completely disappeared. An electrocardiogram (see figure, *B*) showed normal sinus rhythm, with no evidence of myocardial damage. The basal metabolic rate was -13% and blood cholesterol 250 mg. per 100 cc. On March 4, 1953, observation showed basal metabolic rate +1% and blood cholesterol 280 mg. per 100 cc. The patient remained clinically well, and there was no return of the auricular fibrillation.

COMMENT

The myxedematous patient responds to small doses of thyroid with a prompt rise in the basal metabolic rate and the serum protein-bound iodine, and these remain elevated as long as use of the drug is continued. Euthyroid subjects, however, show great individual variation in tolerance and response to prolonged administration of increasing amounts of the drug. In most euthyroid subjects, studies of basal metabolic rate, serum protein-bound iodine, and radioactive iodine uptake indicate that the activity of the thyroid gland is reduced under prolonged administration of thyroid.[2] In one patient with factitious thyrotoxicosis who was operated upon for toxic diffuse goiter (Graves' disease), the thyroid gland was found to be small, and biopsy was reported as showing "involution."[3] These observations are in keeping with experimental data that show suppression of thyroid activity and shrinkage of the gland after feeding of thyroid. It is thought that these effects are brought about by decreased secretion of thyrotropic hormone. In this connection it has been emphasized that endocrine glands in general may be set at rest and even caused to undergo atrophy by administration of large amounts of their specific hormones.



Electrocardiographic recordings of patient who developed auricular fibrillation following prolonged use of thyroid. *A*, auricular fibrillation with normal ventricular complexes (Nov. 3, 1952). *B*, regular sinus rhythm with normal ventricular complexes (Dec. 12, 1952).

The remarkable ability of the average euthyroid subject to develop tolerance to large doses of thyroid fortunately greatly reduces the incidence of hypermetabolism that might otherwise result from the prevalent indiscriminate use of thyroid preparations. On the other hand, the development of hypermetabolism simulating precisely the picture of full-blown thyrotoxicosis has also been reported in patients receiving large amounts of thyroid. Most instances of endogenous hyperthyroidism that are masked as heart disease are associated with auricular fibrillation. In general, auricular fibrillation occurs in 6 to 34% of hyperthyroid patients.[4] A search of the literature, however, yields only three previously re-

1. Cave, E. F.: Symposium on Specific Methods of Treatment: Pain in Neck and Upper Extremity, M. Clin. North America **34**: 1323, 1950.

2. Billings, F. T.: Iatrogenic Hypothyroidism, Am. J. M. Sc. **221**: 495, 1951.

3. Cope, O.; Rawson, R. W., and McArthur, J. W.: The Hyperfunctioning Single Adenoma of the Thyroid, Surg., Gynec. & Obst. **84**: 415, 1947.

4. Ernstene, A. C.: The Cardiovascular Complications of Hyperthyroidism, Am. J. M. Sc. **195**: 248, 1938. Hamilton, B.: The Heart in Toxic Thyroid States, S. Clin. North America **4**: 1411, 1924.

ported cases of auricular fibrillation [5] and one case of auricular flutter [6] arising after thyroid administration to the euthyroid subject. In each case reversion to regular sinus rhythm followed cessation of use of the drug. In this connection it is interesting to note that studies of the effect of feeding large doses of thyroid to dogs, all of which develop signs of severe hyperthyroidism, showed that, while tachycardia occurred regularly, it was accompanied by actual disappearance of the normal respiratory arrhythmia that is characteristic of this animal.[7]

923 Fifth Ave. (21).

5. Hurxthal, L. M.: Experiences with the Use of Desiccated Thyroid: Methods of Detecting Self-Induced Hyperthyroidism, with a Report of a Case in Which Auricular Fibrillation Occurred, New York State J. Med. **44**: 2217, 1944. Rogers, H. M.: The Cardiovascular Manifestations of Induced Thyrotoxicosis: Report of 2 Cases, Ann. Int. Med. **26**: 914, 1947.

6. Bortin, M. M., and Yohalem, S. B.: Thyrotoxicosis Factitia Masked as Heart Disease, Am. Heart J. **39**: 894, 1950.

7. Sato, H.: Studies on the Cardiac Rhythm of the Dog in Experimental Hyper- and Hypo-Thyroidism, Tohoku J. Exper. Med. **53**: 317, 1951.

MECHANICAL DRAINAGE OF MASSIVE EDEMA

John B. Wild, M.D., Iowa City

Despite modern therapy edema sometimes proves to be a formidable problem, and recourse has to be made to mechanical means for removing excess fluid. The conditions in which intractable edema most commonly occur are congestive heart failure and nephrosis associated with low serum albumin, with or without a complicating hypertension. No claim is made that the method described is original, and no extensive search of the literature has been carried out. A large number of current and old textbooks have been consulted, and none of them mentions this particular technique. A number of them do not mention the mechanical drainage of edema fluid at all.

Two methods are commonly used for the mechanical removal of dependent subcutaneous fluid. The first is by the introduction of Southey's tubes into the subcutaneous tissue.[1] Long rubber tubes can then be attached to these and led into a basin at the patient's feet. The second method is by making multiple punctures through the skin into the subcutaneous tissue, allowing the fluid to drain from the skin. The use of Southey's tubes appeals because, in theory at least, the fluid can be led tidily away, and it is unlikely that organisms will gain access to the subcutaneous tissue up the long tubes down which the edema fluid is flowing. In practice, however, the tubes are likely to block and as much drainage takes place around them as through their lumens.

The principal objections to the use of multiple punctures through the skin are that they may be extremely painful and that there is a danger of sepsis. This danger is probably overemphasized, because mechanical drainage is not employed unless there is a great deal of edema fluid present; when punctures are made, the flow of fluid is considerable and tends to wash organisms away. When the flow is reduced the legs can be sponged three or four times a day with an antiseptic topically and a wide-spectrum antibiotic can be given parenterally. Pain may be reduced to a minimum by the use of the technique described below.

The apparatus used for making the multiple punctures consists of a piece of cork about 5 by 2.5 by 0.7 in. (12.5 by 6.2 by 1.8 cm.) through which four rows of three 20-gauge needles are thrust so that the points project by at least half an inch (see figure). The whole apparatus is autoclaved. The sites selected for puncture are the most dependent parts of the body where the edema is massive. These usually will be the dorsum of the feet and the medial and lateral aspects of the dorsum of the legs. The skin is scrupulously cleaned and sprayed with ethyl chloride until it is chilled. The operator then holds the battery of needles firmly in the palm of his hand and stabs the sites chosen; the points should penetrate about a quarter of an inch below the skin. If the operator's movements are swift, it should be possible to make 36

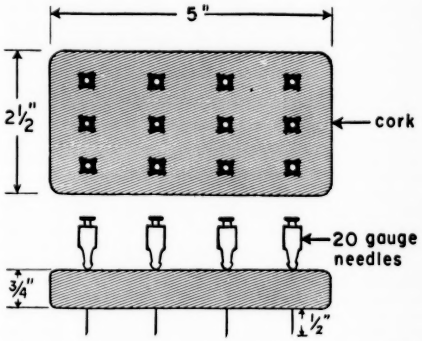


Diagram of apparatus for mechanical drainage of massive edema. Above, surface view. Below, side view.

punctures in less than two seconds. The needles are not left in the skin but are removed as rapidly as they are inserted. It will be found that the patient feels as if he is being stuck with one needle each time the battery of punctures is made, provided the needles are used rapidly and forcibly.

The patient is then made to sit in an easy chair or cardiac bed with the legs dependent. If the edema fluid drained is to be measured, a rubber sheet is arranged behind the legs to channel the fluid into basins. Care should be taken not to allow the patient's feet to rest on the bottom of the basins because they will soon be soaking in edema fluid and will become cold and the skin will become macerated. The feet can conveniently be supported on a small stool. A broad-spectrum antibiotic is given for at least 24 hours longer than the legs drain, and the puncture sites are bathed with a mild antiseptic four times a day. Whether or not these precautions are necessary is not known, but one is loath to omit them. In the cases described below in which this technique

1. Southey, R.: Traitement de l'anasarque général par un drainage capillaire, Compt.-rend. A. franç. pour l'avancement d. sc. **6**: 856-860, 1877.

was used, and in several others, no single case of sepsis that could conceivably be traced to the skin punctures was seen.

REPORT OF CASES

CASE 1.—An obese, dyspneic, orthopneic 51-year-old white woman suffering from nephrosis had massive edema of the legs, anterior abdominal wall, and sacrum. Widespread rales were heard in the chest except where there was a right hydrothorax. The heart was enlarged. The blood pressure was 170/100 mm. Hg. On admission the output of urine was scanty and contained 4+ protein. No erythrocytes or hemoglobin could be found in a centrifuged urine. The hemoglobin level was 13 gm. per 100 ml., and the white blood cell count was normal. The serum protein level was 5.1 gm. per 100 ml., the albumin level 2.95 gm., and the globulin 2.15 gm. per 100 ml. The blood urea nitrogen level was 99 mg. and creatinine level 6.7 mg. per 100 ml.

Mercurial diuretics were given intramuscularly on the first and second hospital days. The diuresis was satisfactory but made little impression on the edema, and it was obvious that this form of therapy would be extremely slow in removing the excess fluid. On the second hospital day 600 cc. of fluid was removed from the right pleural cavity. On the third hospital day multiple punctures were made in her feet and legs, and the fluid was collected in basins. In six days 13,250 cc. of fluid drained from the feet and legs. Her weight fell from 265.5 lb. to 232 lb. During this time she was eating a diet containing 150 gm. of protein. There was no sodium restriction and no diuretics were administered while the legs were draining. The urine output was satisfactory throughout, and the blood urea nitrogen fell to 70 mg. per 100 ml. and the creatinine level to 2.6 mg. per 100 ml.

The patient was discharged on March 12, 1954, weighing 240 lb. She continued with her high-protein diet for only three weeks and then could no longer tolerate it. Injections of mercurial diuretics three times a week produced good diuretic responses, but she started to gain weight and was readmitted on June 16, 1954. Her edema was once more considerable and the other findings were similar, except the blood urea nitrogen and creatinine, which were 19 mg. and 1.6 mg. per 100 ml. respectively. June 17 the legs and feet were again punctured, and a total of 6,050 cc. was collected in the next six days. Her weight fell from 257 to 229 lb. During this period she received mercurial diuretics with excellent response. She was discharged on June 30, weighing 221 lb. and feeling quite comfortable.

CASE 2.—A 50-year-old white woman suffering from severe, prolonged hypertension complicated by congestive failure had intractable edema that failed to respond to a low sodium diet and mercurial diuretics. For 17 days her weight varied between 167 and 151 lb. After her legs and feet were punctured, her weight fell from 151 to 110 lb. in four days. Her general condition very greatly improved, and she could walk about once more.

CASE 3.—A 46-year-old white woman with severe congestive failure complicating hypertension did not respond to a low-sodium diet and mercurial diuretics. For six days prior to the puncture of her feet and legs, her weight varied between 123 and 127 lb. Following puncture of the lower limbs, her weight fell to 113 lb. Thereafter she responded well to diuretics. She was discharged in 25 days weighing 109½ lb. and three months later during a routine check was found to weigh exactly the same.

CASE 4.—A 32-year-old white woman had severe congestive failure and edema complicating hypertension, diabetes, and albuminuria. Only the feet were punctured because of sepsis on the legs. In three days 3,275 cc. of fluid was collected. She died suddenly and unexpectedly on the fourth day after her feet were punctured. Permission for autopsy was refused.

CASE 5.—A 50-year-old Negro with hypertension and congestive failure showed no response to treatment with diuretics and sodium restriction. Three liters of fluid was collected in two days after puncturing the feet and legs. Thereafter there was a good response to the repeated use of mercurial diuretics.

COMMENT

I consider that the method I have described is the method of choice for the mechanical relief of edema fluid. I use it in the following circumstances: (1) when edema causes tension of the skin that is not rapidly relieved by more conservative therapy, (2) when there is no diuresis following the use of mercurial diuretics, (3) when mercurial diuretics are contraindicated, and (4) in order to shorten a patient's stay in hospital. The advantages of the method described are that the apparatus is simple, the time taken is minimal, and it can easily be employed in the patient's home when this is necessary.

SIMPLE PALPATION TO DETECT VALVULAR INCOMPETENCE IN PATIENTS WITH VARICOSE VEINS

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During recent years, practically every report concerning the treatment of varicose veins has emphasized the importance of a proper high ligation of the long saphenous vein. This implies that the long saphenous vein is ligated flush with the femoral vein after all of its adjacent branches are ligated and divided. Unfortunately, in a significant number of cases, the dissection is not carried high enough. Unless the femoral vein is visualized, branches of the saphenous vein near the saphenofemoral junction may be overlooked, and it is these vessels that usually cause recurrent varicosities. The predominant venous insufficiency is usually at the saphenofemoral junction, but there may be incompetent valves in other communicating vessels of the thigh or leg or at the short saphenous vein–popliteal vein junction. The success of operation depends upon the ability of the surgeon to detect and eliminate all sites of valvular incompetence.

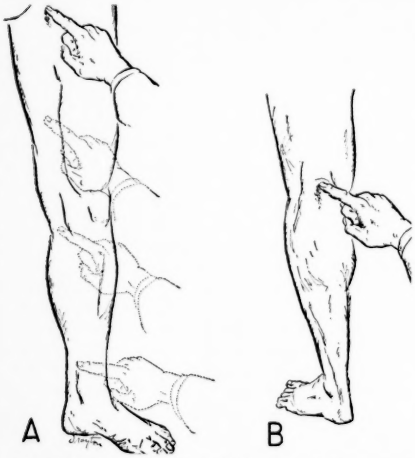
Many diagnostic tests have been devised to aid the physician in the detection and localization of "blow-outs." The tests most commonly used are: (1) Brodie-Trendelenburg, (2) comparative tourniquet (Ochsner-Mahorner), (3) Perthes', (4) compression, and (5) Schwartz (percussion) test. Performing and interpreting these tests is a rather formidable and time-consuming job for the average student or practitioner. According to Steiner and Palmer's findings,[1] the Perthes', compression, and Schwartz tests have little to offer, are unreliable, and reveal no information that cannot be obtained by more accurate methods. "It would seem that the Brodie-Trendelenburg test, with the additional feature of the tourniquet placed just above the level of the knee . . . will actually afford all of the information required for one to treat any uncomplicated case of varicose veins." Luke [2] also believes that valvular incompetence can be determined by the Brodie-Trendelenburg test and that the other modifications of this test are unnecessary in the evaluation of any case of primary vari-

1. Steiner, C. A., and Palmer, L. H.: A Simplification of the Diagnosis of Varicose Veins, Ann. Surg. **127**: 362-371, 1948.

2. Luke, J. C.: Venous Disorders of the Lower Extremity, Ciba Clin. Symposia **5**: 100-124, 1953.

cose veins. He states: "The modifications of the Trendelenburg test were designed to indicate the competence of communicating veins. In theory this would appear to be quite worthwhile; however, in practice, one cannot rely on such findings. In addition, when the operation of stripping of the great and small saphenous veins is carried out, most incompetent communicating veins are automatically interrupted. Thus, the modifications of the Trendelenburg test, such as the comparative tourniquet or multiple tourniquet tests, become unnecessary."

As the result of examining many patients with varicose veins, it has become apparent that in practically all cases of saphenofemoral insufficiency, a definite "bulge" can be palpated in the region of the fossa ovalis (see figure, *A*). This has even been true in obese patients. If the tip of the index finger is placed just below the inguinal



The use of simple palpation to localize sites of valvular incompetence in patients with varicose veins. *A*, the tip of the index finger palpates the area just below the inguinal ligament, just mesial to the femoral artery. In patients with saphenofemoral insufficiency, a definite venous "bulge" is invariably palpable. The finger is then run slowly downward along the course of the long saphenous vein. Any abrupt increase of the pressure within the vein usually indicates an incompetent valve immediately above this level. *B*, a similar test used to detect incompetence at the short saphenous-popliteal vein junction. If significant venous insufficiency is present, a definite "bulge" can be palpated in the center of the popliteal space. The finger is then run downward along the course of the short saphenous vein to detect any other "blow-outs."

ligament, just mesial to the femoral artery, the "bulge" is easily palpated. In order to detect any valvular incompetence below this level, the tip of the index finger is run slowly down the thigh and leg along the course of the saphenous vein. If other "blow-outs" exist, a sudden increase of the pressure within the saphenous vein will occur immediately below the site of each incompetent valve. It has been my experience that the vast majority of patients with varicose veins have their predominant insufficiency at the saphenofemoral junction.

In order to detect valvular incompetence along the short saphenous system, the popliteal space is palpated. If short saphenous-popliteal vein insufficiency exists, a "bulge" can usually be palpated in the center of this space (see figure, *B*). The finger is then run downward along the course of the short saphenous vein in order to detect any further "blow-outs." As a rule, the incompetence in the short saphenous system has its origin at the saphenopopliteal vein junction. Therefore, at the time of surgery, it is important to ligate the short saphenous vein flush with the popliteal, after all adjacent branches have been divided.

In the vast majority of patients with varicose veins, all venous incompetence originates along the long or short saphenous vein. Occasionally there will be an atypical "blow-out." This can be easily detected by simple inspection and palpation of the thigh and leg. It has been our practice to have the patient stand for several minutes so that the veins may assume their greatest prominence. The tip of the index finger is then run along the course of the long and short saphenous veins. Each site of valvular insufficiency is localized and accurately mapped out.[3] It has been my experience that accurate localization of all perforators can be carried out without the addition of any further diagnostic tests.

CONCLUSIONS

The use of simple palpation has been found to be accurate in the detection of sites of valvular incompetence. It has not been necessary to use tourniquet tests or other complicated maneuvers. The palpation technique is simple to master and takes only a few minutes to carry out. It greatly facilitates diagnostic study in patients with varicose veins.

1150 Park Ave. (28).

3. Nabatoff, R. A.: Importance of Adequate Excision of All Incompetent Perforator Vessels in the Surgical Treatment of Varicose Veins: Use of a New Marking Ink to Delineate the Varices, New York J. Med. **52**: 563-565, 1952.

Estrogen Therapy.—The objective of estrogen therapy is to reduce the intensity of distressing symptoms, as well as to tide the patient over a period of physiologic adjustment. Orally taken estrogen is particularly suited to menopausal therapy, and there is no need for its parenteral administration. A positive advantage of oral therapy is the fact that a distinctly smoother control of symptoms may be obtained with any of the estrogens by the taking of one or more doses daily than by any of the ordinary injection procedures at intervals of a week or more. The smallest oral dose required to assuage vasomotor symptoms should be prescribed according to definite rules. Whether one employs a daily dose of 0.625 mg. of estrone sulfate, 0.2 mg. of dienestrol, 0.5 mg. of stilbestrol, or 0.02 mg. of ethinyl estradiol is immaterial. The important precepts are to prescribe the estrogen for a limited period and to withdraw it in gradual manner. The most prevalent abuse in the usage of estrogen, aside from needless employment of estrogenic injections, is the prescription of a routine dose to be taken daily more or less indefinitely. It must be re-emphasized that the objective of estrogen therapy of the menopausal syndrome is to aid the patient's adjustment to the diminution and eventual cessation of ovarian function. This logical aim is lost if the estrogen is not prescribed for measured periods, with repeated attempts to withdraw the hormone entirely. It's about time that we spend more time mitigating menopausal anxiety and less time prescribing estrogen as an "all-purpose female tonic."—S. Leon Israel, M.D., *Journal of the Albert Einstein Medical Center*, November, 1954.

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FAMILIAL HEREDITARY PURPURA SIMPLEX WITH SCHÖNLEIN-HENOCH SYNDROME

RESPONSE TO CORTICOTROPIN (ACTH), CORTISONE, AND ANTIHISTAMINICS

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and
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Purpura simplex is a term applied to mild spontaneous purpuric skin manifestations with no hematological abnormality and with the Rumpel-Leede phenomenon frequently present. The condition occurs almost only in women, rarely in children, and is often familial. It has been well recognized since the descriptions by Willan and Bateman early in the 19th century. The hereditary feature was first noted by Bauer in 1868. Davis [1] gave the name hereditary familial purpura simplex to this syndrome, which occurred in 88 members of 27 families studied in London. Soulier [2] in France confirmed Davis' findings and noted bleeding in mucous membranes as well as in the skin. In five of Davis' families [1c] a case of Schönlein-Henoch purpura was noted. In Bauer's family study, reported in 1868, one of three sisters having purpura simplex developed severe visceral hemorrhages and died at 22 years of age (perhaps of Henoch's purpura).

Schönlein-Henoch syndrome is the term applied to a condition in which nontraumatic bleeding with or without edema occurs in the absence of hematological abnormality in one or more of the following areas: skin, subcutaneous tissue, mucous membranes, joints, and viscera. First described by Willan in 1808, its skin and joint manifestations were recorded in 1837 by Schönlein, its gastrointestinal disturbances pointed out by Henoch in 1874, and its multiplicity of symptoms and etiologies clarified by Osler. It is currently regarded as an allergic phenomenon, characterized pathologically by increased capillary permeability and produced by sensitivity to bacteria, foods, drugs, or unknown factors. It usually occurs in children and young adults of both sexes and is not ordinarily considered familial, although a syndrome with its characteristics has been described in five generations of a family.[3] The following case is presented to call attention to the possible coexistence of the two syndromes since hereditary familial purpura simplex with Schönlein-Henoch syndrome has not been described in the United States. In addition, the efficacy of corticotropin (ACTH), cortisone, and chlorpheniramine (Chlor-Trimeton) maleate, with relapse following withdrawal of each, seems worthy of note.

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1. Davis, E.: (*a*) Hereditary Familial Purpura Simplex, Lancet **2**: 1110 (Nov. 25) 1939; (*b*) Hereditary Familial Purpura Simplex: Review of 27 Families, ibid. **1**: 145 (Feb. 1) 1941; (*c*) The Schönlein-Henoch Syndrome of Vascular Purpura, Blood **3**: 129 (Feb.) 1948.

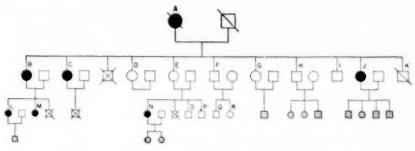
2. Soulier, J. P.: Syndromes hémorragiques avec atteinte isolée de la Résistance capillaire: Étude de 38 cas, Sang **21**: 801, 1950.

3. Reimann, H. A., and Angelides, A. P.: Periodic Arthralgia in 23 Members of 5 Generations of a Family, J. A. M. A. **146**: 713 (June 23) 1951.

REPORT OF A CASE

A 24-year-old white woman was first hospitalized at Beth Israel Hospital on Jan. 8, 1952, with a nine day history of a rash, consisting of small red spots over the legs and with some itching. The rash extended to the buttocks, back of neck, and face, with intermittent progression and recession. At the same time, pain and decreased mobility of fingers, ankles, knees, and shoulders developed, with some ankle swelling. The temperature ranged from 100 to 101 F evenings. Chloramphenicol (Chloromycetin), 250 mg. every six hours for 10 doses, did not alter symptoms.

Except for an annual "summer cold," the patient had been well until 1947, when at irregular intervals of three to six months she developed episodes of petechiae on the arms, pain in the knees and back of legs, low-grade fever, and leukocytosis with a normal erythrocyte sedimentation rate. These attacks generally lasted several days. Sharp abdominal pain was noted during some of these episodes and sometimes independently. Persistent coldness and hyperhidrosis of extremities were also noted. In March, 1948, the patient underwent appendectomy because of right lower abdominal pain, fever, and a leukocyte count of 18,500 per cubic millimeter. The pathologist reported a "grossly normal appendix with an intact mucosa." Some blood was found in the lumen and there were subserosal congested vessels with "no associated inflammatory reaction." In June, 1948, the patient was given a sulfonamide for an upper respiratory infection. She



Geneological presentation of pertinent symptoms in family of patient studied.

developed severe cough, slight hemoptysis, purpura, and fever. A month of tuberculosis rest therapy followed despite negative tests for tuberculosis. The same episodes persisted. Brucellosis was considered, and the patient finally was referred for psychiatric therapy. Although some benefit was obtained, the above-described picture was not altered. Several months later, the heterophil titer for suspected infectious mononucleosis was negative. The family history revealed the presence of one or more of the following symptoms in many of the female adults over three generations: profuse bleeding due to trauma, epistaxis, urticaria, joint pain and swelling, abdominal pain, heart murmur, and spontaneous ecchymoses. (See figure and table. Persons designated as B, C, L, and M were examined by one of us [N. W.].) None of these symptoms and signs were present in the history of any of the males.

Physical examination revealed the following positive findings: temperature 100.4 F, pulse rate 112 beats per minute. There was a petechial morbilliform rash over the lower part of both legs and to a lesser degree on the face and back. The heart rhythm was regular, with a rate of 112. A faint blowing systolic murmur was heard at the cardiac apex. The liver edge was palpable 1 cm. below the costal margin. Minimal swelling of the third and fourth phalanges bilaterally was noted.

Laboratory Data.—Urinalysis was negative. The hemoglobin level was 13 gm. per 100 cc. (84%), leukocytes 15,000 per cubic millimeter, polymorphonuclear cells 77%, stab forms 2%, lymphocytes 11%, eosinophils 4%, monocytes 6%; platelets 169,000, and erythrocyte sedimentation rate 5 mm. in one hour. The blood glucose level was 99 mg. per 100 cc., blood nonprotein nitrogen 27 mg. per 100 cc., and serum protein 6.79 mg. per 100 cc., with albumin 4.9, globulin 1.8, and the albumin-globulin ratio 2.7. The thymol turbidity was 3.7 units and cephalin flocculation 2+ in 48 hours. The plasma ascorbic acid level was 2.16 mg. per 100 cc.; prothrombin time, modified

prothrombin consumption time,[4] bleeding time, Lee-White clotting time, and clot retraction were all normal. Kahn and Wassermann serologic tests were negative. The electrocardiogram and chest x-ray were normal. The Rumpel-Leede phenomenon was markedly present.

Clinical Course.—The clinical diagnosis of Schönlein-Henoch purpura in a patient with familial hereditary purpura simplex was made. The patient was given corticotropin intravenously in 1,000 cc. of 5% glucose solution over a period of 10 hours on Jan. 13, 1952. There was marked improvement after the first dose. The following day, the same treatment was given, with complete disappearance of all signs and symptoms. Dosage of corticotropin was tapered off in 5 mg. decrements. The Rumpel-Leede phenomenon became absent. After a final dose of 2.5 mg., the patient was discharged on Jan. 17, 1952.

Second Admission.—The patient was well for two days; then recurrent arm and shoulder pain and stiffness as well as swelling of fingers developed, and spontaneous ecchymoses of thighs were noted. Acetylsalicylic acid was administered without any effect on symptoms, until tinnitus and vomiting supervened, and the patient was readmitted on Jan. 23, 1952. Physical examination revealed a temperature of 99.6 F; tenderness and pain of neck, shoulders, elbows, wrists, and fingers, and mild interphalangeal joint swelling with limitation of motion.

The Rumpel-Leede phenomenon was again present. Twenty milligrams of corticotropin intravenously gave complete remission. The dosage was tapered rapidly, therapy changed to cortisone, and the patient was discharged on Jan. 28, 1952, on a regimen of 25 mg. cortisone four times daily. This was reduced gradually to 12.5 mg. daily, and in two weeks therapy was stopped. The Rumpel-Leede phenomenon became absent. The patient remained symptom-free until about a week later, when mild ankle and knee pain recurred as well as interphalangeal stiffness and swelling. Tripelennamine (Pyribenzamine), 50 mg. every four hours, controlled these symptoms in one day but evoked unpleasant side-effects of nausea and somnolence. Therapy with chlorpheniramine, 4 mg. given four times daily, was instituted, with complete clinical relief of symptoms and absence of the Rumpel-Leede phenomenon. After several weeks, this therapy was discontinued, and the patient was asymptomatic for the three months that she was followed without therapy; however, the Rumpel-Leede phenomenon again was mildly present.

COMMENT

Both the Schönlein-Henoch syndrome and familial hereditary purpura simplex are relatively benign conditions, the latter even more than the former, in which the establishment of the diagnosis is of greatest importance because of the resultant prevention of unnecessary or erroneous treatment. In this case, diagnoses entertained prior to hospitalization included pulmonary tuberculosis, acute appendicitis, infectious mononucleosis, brucellosis, psychoneurosis, secondary syphilis, and rheumatic fever.

The coexistence of these two syndromes as noted by Davis,[1] and in our case, suggests some common etiological relationship. Another point in favor of some common denominator is revealed by a review of the diseases that have been found related to each of these two entities. Davis points out, in the literature and in his own series,[1] a significant association between familial hereditary purpura simplex and both rheumatic fever and rheumatoid arthritis. In our family study, there are three persons with known heart murmurs, five persons with transient joint pains and swelling, and one with definite joint deformities. Schönlein noted a high incidence of rheumatic sufferers among patients having the syndrome that bears his name. Since then, Osler and many others [5] have suggested a linkage with anaphylactic states, acute nephritis, rheumatic fever, and polyarteritis nodosa. Quick [6] suspected a close relation with thrombocytopenic purpura.

A common pathogenic factor noted in all these diseases is alteration of capillary endothelium with resultant increased permeability, perhaps with a hypersensitive state. Since adrenal cortical stimulation with corticotropin, and cortisone have been shown to increase capillary resistance by Robson and Duthie [7] and others,[8] corticotropin was used therapeutically with excellent rapid response followed by prompt relapse on subsequent cessation of therapy. This same sequence was repeated once again with corticotropin and then with cortisone. The same beneficial effect was noted by Stefanini and others [9]

Distribution of Age, Sex, Symptoms, and Signs in Family of Patient with Purpura Simplex

Members of Family	A	B	C	D	E	F	G	H	I	J	K	L	M*	N	O	P	Q	R
Sex	F	F	F	F	F	M	F	M	M	F	M	F	F	F	M	M	M	F
Age, yr.	71	59	58	53	51	49	45	43	40	39	23	36	24	30	24	21	20	18
Spontaneous petechiae and ecchymoses	+	+	+	0	0	0	0	0	0	+	0	+	+	+	0	0	0	0
Epistaxis	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Excessive bleeding from trauma	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Urticaria	+	+	+	0	+	0	0	0	0	0	0	+	+	+	0	0	0	0
Joint pain and stiffness	0	+	0	0	0	0	0	0	0	+	0	+	+	+	0	0	0	0
Abdominal pain	0	0	0	0	0	0	0	0	0	+	0	0	+	0	0	0	0	0
Heart murmur	0	0	0	0	0	0	0	0	0	+	0	0	+	+	0	0	0	0
Joint swelling and arthritis	0	0	0	0	0	0	0	0	0	+	0	0	+	0	0	0	0	0
Tourniquet test	?	+	+	?	?	?	?	?	?	?	?	+	+	?	?	?	?	?

* Subject of this report.

4. Wald, N.; Weiner, M., and Sussman, L. N.: Investigation of Coagulation Defects Using a Modified Prothrombin Consumption Test, abstracted, Clinical Research Meeting, April 23 and 24, 1952, Bull. New York Acad. Med. **28**: 609 (Sept.) 1952.

5. Wintrobe, M. M.: Clinical Hematology, ed. 3, Philadelphia, Lea & Febiger, 1951. Ruben, R. M.: Case 1: Henoch-Schönlein Purpura with Nephritis, in Karelitz, S.: Conference at the Mount Sinai Hospital of New York, March 24, 1949, Clinical Conference, J. Pediat. **36**: 810 (June) 1950. Gairdner, D.: Schönlein-Henoch Syndrome (Anaphylactoid Purpura), Quart. J. Med. **17**: 95 (April) 1948. Levitt, L. M.; Burbank, B., and Nath, B.: Henoch-Schönlein's Syndrome with Glomerulonephritis, Ann. Int. Med. **33**: 1374 (Dec.) 1951.

6. Quick, A. J.: Physiology and Pathology of Hemostasis, Philadelphia, Lea & Febiger, 1951.

7. Robson, H. N., and Duthie, J. J. R.: Capillary Resistance and Adrenocortical Activity, Brit. M. J. **2**: 971 (Oct. 28) 1950.

8. Ebert, R. H.: Changes in Connective Tissue Reaction Induced by Cortisone—in Vivo Observations Using the Rabbit Ear Chamber Technique, abstracted, Proceedings of the 43rd Annual Meeting of the American Society for Clinical Investigation, J. Clin. Invest. **30**: 636 (June) 1951. Faloon, W. W.; Greene, R. W., and Lozner, E. L.: The Hemostatic Defect in Thrombocytopenia as Studied by the Use of ACTH and Cortisone, ibid. **30**: 638 (June) 1951.

9. Stefanini, M.; Roy, C. A.; Zannos, L., and Dameshek, W.: Therapeutic Effect of Pituitary Adrenocorticotropic Hormone (ACTH) in Case of Henoch-Schönlein Vascular (Anaphylactoid) Purpura, J. A. M. A. **144**: 1372 (Dec. 16) 1950.

and Kugelmass [10] in Schönlein-Henoch syndrome and by Hewlett and Scott [11] in 12 patients with assorted thrombocytopenic states. In view of the often suggested possibility of an allergic basis for this syndrome, antihistaminics were tried. Tripelennamine and chlorpheniramine therapy was used, with good response. A similarly good result has been reported by Keenan.[12] The lack of a clinical relapse on cessation on antihistamine therapy suggests that the present episode may have run its course; however, the rapid onset of effect and the post-therapy return of the positive Rumpel-Leede phenomenon in our case, as well as the good response of Keenan's patient to tripelennamine would seem to indicate that these medicaments, too, are sometimes effective in temporarily restoring normal capillary endothelial integrity.

SUMMARY

Schönlein-Henoch syndrome was found to coexist in an individual with familial hereditary purpura simplex. Altered capillary endothelium is a common pathogenic factor in these syndromes. Therapy with corticotropin (ACTH), cortisone, and antihistamines is beneficial.

APO 182, % PM, San Francisco (Dr. Wald).

10. Kugelmass, I. N.: Cortisone in Allergic Purpura of Children, New York J. Med. **51**: 2504 (Nov. 1) 1951.

11. Hewlett, J. S., and Scott, T.: Responses to Corticotropin (ACTH) and Cortisone in Thrombocytopenic States, Cleveland Clin. Quart. **20**: 430 (Oct.) 1953.

12. Keenan, W. S.: Treatment of Henoch's Purpura with Pyribenzamine: Case Report, Lahey Clin. Bull. **7**: 54 (Oct.) 1950.

NEW REGIONAL ANESTHETIC TECHNIQUE FOR ADULT CIRCUMCISION

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and
Lieut. Bernard V. Wetchler (MC), U. S. Army

Adult circumcision is a minor procedure for which a safe, simple, and satisfactory local anesthetic technique is difficult to come upon. Although many different regional methods have been described,[1] they do not always result in a pain-free procedure, and frequently more agent than is necessary has to be used. Labat [1a] and Tuohy [1b] attribute tissue slough to local infiltration (particularly around the prepuce); whereas Fruin and McLaughlin [2] feel it is the cause of excessive postoperative edema and tardy healing. As a result of this, many clinics have had to resort to either spinal or general anesthesia, thereby greatly increasing operative and postoperative morbidity. For this procedure (which so often is done at the office), we feel that only a local anesthesia should be used. A regional method will be presented, which we believe fulfills all of the requirements for the ideal circumcision anesthetic.

Dr. Wetchler is now in private practice in Peoria, Ill.

1. (*a*) Labat, G.: Regional Anesthesia: Its Technic and Clinical Application, Philadelphia, W. B. Saunders Company, 1928, p. 464. (*b*) Tuohy, E. B.: Regional Block Anesthesia for Operations on Perineum, Anus, Genitalia, and Lower Extremities, Anesthesiology **2**: 369-387 (July) 1941. (*c*) Pitkin, G. P.: Conduction Anesthesia, Philadelphia, J. B. Lippincott Company, 1953, p. 702. (*d*) Lee, J. A.: Synopsis of Anesthesia, ed. 2, Baltimore, Williams & Wilkins Company, 1950, p. 208. (*e*) Adriani, J.: Techniques and Procedures of Anesthesia, Springfield, Ill., Charles C Thomas, Publisher, 1947, p. 314. (*f*) Magid, M. A., and Culp, O. S.: Ideal Penile Anesthesia Obtained by Injection of Corpora Cavernosa, Urol. **50**: 508-513 (Oct.) 1943. (*g*) Cullen, S. C.: Anesthesia in General Practice, ed. 3, Chicago, Year Book Publishers, Inc., 1951, p. 209.

2. Fruin, R. L., and McLaughlin, C. W., Jr.: Adult Circumcision: Report of 854 Operations on Naval Recruits, U. S. Naval M. Bull. **45**: 42-46 (July) 1945.

3. Morris, H.: Human Anatomy: A Complete Systematic Treatise, edited by C. M. Jackson, ed. 9, Philadelphia, P. Blakiston's Son & Company, Inc., 1933, p. 1097. Gray, H.: Anatomy of the Human Body, edited by W. H. Lewis, ed. 24, Philadelphia, Lea & Febiger, 1942, p. 985. Sobotta, J.: Atlas of Human Anatomy, English ed. 2, from German ed. 6, edited by J. P. McMurrich, New York, G. E. Stechert & Company, 1928.

INNERVATION

Many men are of the opinion that the dorsal nerves alone are responsible for the cutaneous innervation of the penis. This is not so. The nerve supply of the penis is derived from the pudendal nerve. It divides into two main branches, the dorsal and perineal nerves. The dorsal nerves supply the skin of the dorsolateral aspects of the penis and send terminal filaments to the glans. The perineal nerve subdivides into posterior scrotal and muscular branches.[3] We believe these posterior scrotal branches send out fibers that run paraurethrally, supplying sensation to the ventral portion of the penis and the mucous membrane of the urethra. We have attempted by selective nerve blocks to show this dual nerve supply to be present. By injecting the dorsal nerves with procaine hydrochloride, sensory anesthesia of the dorsal and lateral aspects of the penis and the entire glans with the exception of the prenulum was obtained. Paraurethral injections blocked sensation to the ventral penile surface and also rendered the frenular area and the urethral mucosa insensitive to stimuli. These four nerves, two dorsal and two paraurethral, are injected in our procedure.

CONSIDERATIONS OF THE PROCEDURE

Premedication.—The use of adequate sedative and hypnotic drugs preoperatively cannot be overly stressed in adding to the success of any regional procedure. Proper timing is of particular importance. Our patients were all given 100 mg. of secobarbital (Seconal) the night preceding surgery. On the operative day, 60 to 90 minutes prior to surgery, the patient received: secobarbital, 100 mg.; meperidine (Demerol) hydrochloride, 100 mg.; and scopolamine hydrobromide, 0.4 mg.

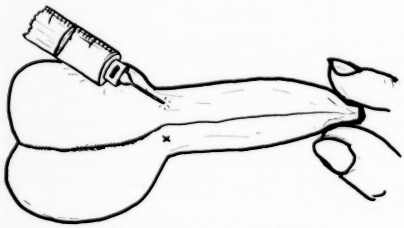
Solutions Used.—Procaine hydrochloride 1% was used in all cases. Sufficient epinephrine (Adrenalin) was added (5 drops of 1:1,000 epinephrine, delivered through a 22 gauge needle, to 20 cc. of 1% procaine hydrochloride) to produce a 1:200,000 concentration. This syringe should not be used for the block. A greater concentration of epinephrine may result in an almost bloodless operation, thereby increasing the possibilities of postoperative bleeding once the vasoconstriction has subsided. Epinephrine, 1:200,000, yields an optimum effect, should cause no untoward reactions, and is essential to the success of the procedure.

Method.—The operative area is cleansed. The dorsal nerves are blocked at the base of the penis. A 23 gauge

needle is inserted perpendicularly through the skin on either side of the midline until a definite sense of resistence is experienced. For each side 3 cc. of 1% procaine hydrochloride is injected. If the needle pierces the corpus, pain will result. The penis is then pointed cephalad, so that its ventral surface is uppermost, and 2 cc. of 1% procaine is then injected bilaterally (at the base) into the grooves formed by the corpora cavernosa penis and the corpus spongiosum (see figure). These paraurethral injections are more easily accomplished by having the patient maintain gentle traction on the prepuce to keep the penile skin taut. A waiting period of up to 10 minutes is occassionally necessary before surgery can start. However, once the penis shows signs of sensory loss, the block will always be satisfactory. If the solutions are properly placed, analgesia is obtained almost immediately. Block of any of the four nerves may be repeated if necessary.

RESULTS

There have been no cases in which the anesthesia was unsatisfactory. This technique has been used in over 1,000 cases, including urethroplasties and procedures directly on the glans, without any operative or postoperative complications attributed to the anesthesia. No more than 10 cc. of 1% procaine hydrochloride should be used. We have been able to get excellent results using as little as 6 cc. of solution (2 cc. in each dorsal nerve and 1 cc. in each paraurethral space). We consider our method to be a perfectly safe anesthetic for office use.



Technique of block of paraurethral nerves.

SUMMARY AND CONCLUSIONS

Many of the local infiltration techniques used for adult circumcision do not yield a pain-free procedure, may use excessive local agent, and occassionally result in tissue slough and postoperative edema. A regional method combines ease of administration with uniformly excellent results, having been used in over 1,000 cases. It involves blockage of the dorsal and paraurethral nerve supply to the penis. The local drug in all cases was 1% procaine hydrochloride with epinephrine 1:200,000. The maximum amount of procaine hydrochloride necessary for any one patient should be 10 cc.; as little as 6 cc. has produced operative anesthesia. This technique has proved safe, simple, and satisfactory from both the anesthetic and urologic standpoints.

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DIAGNOSTIC PROBLEMS

PRESENTATION OF CASE

John D. Thorpe, M.D., St. Louis

A 64-year-old widow entered Barnes Hospital, St. Louis, on Nov. 18, 1954, complaining of "bloating and belching" of about one month's duration. This was associated with intermittent pain in the left upper abdominal quadrant and anorexia. Later the pain radiated to her back. In the month preceding admission she had lost 10 lb. (4.5 kg.). Four days before she was admitted to the hospital her stools became gray and her skin became yellow.

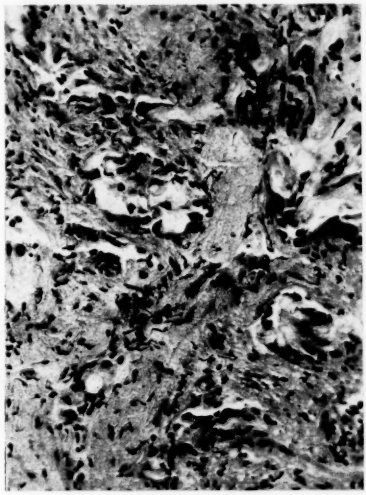

Fig. 1.—Photomicrograph of frozen section of needle biopsy specimen of pancreas, showing poorly differentiated adenocarcinoma growing in a background of fibrous tissue.

Physical Examination.—On admission her systolic blood pressure was slightly elevated; her skin and sclerae were icteric, and a loud grade 2 apical systolic murmur was heard. Her abdomen was not tender, but the liver edge was palpable 3 cm. below the right costal margin and was slightly tender. A tentative diagnosis of obstructive jaundice, with possible early carcinoma of the head of the pancreas, was made.

Laboratory Findings.—Blood cell counts revealed a mild anemia. The urinary bile pigments were increased. A stool was negative for occult blood and was grayish-white. Blood chemistry and liver function studies were

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consistent with obstructive jaundice. Complete gastrointestinal roentgenographic studies including gallbladder showed nonvisualization of the gallbladder. Subsequently the jaundice deepened and glucose tolerance tests, starch tolerance tests, and blood sugar determination indicated a diffuse involvement of the pancreas, possibly with tumor.

Course.—The patient was transferred to the surgical service, and an exploratory laparotomy was performed on Nov. 29, 1954. A mass the size of a golf ball was palpable in the head of the pancreas; the remaining pancreas was found to be indurated. A single lymph node in the gastrohepatic ligament was excised. Frozen section of this node showed no evidence of tumor. Frozen section of a superficial incisional biopsy specimen of the pancreatic mass showed pancreatitis. The duodenum was opened at the suggestion of the pathologist, and the ampulla of Vater was found to be normal in gross appearance. A Vim-Silverman needle was introduced from the duodenum into the pancreas, and frozen section of this needle biopsy material revealed carcinoma. Subsequently paraffin sections of the incisional biopsy specimen of the pancreatic mass also revealed carcinoma. A modified Whipple procedure was then carried out with surgical excision of the head of the pancreas, gallbladder, and the second portion of the duodenum. An anastomosis of the remaining pancreatic duct, common bile duct, and the stomach with the jejunum was made. The surgical specimen revealed a poorly differentiated adenocarcinoma with nerve sheath invasion and invasion of the excised portion of the duodenum (see figure). In six regional lymph nodes there was no evidence of metastasis.

In the immediate postoperative period, the patient did well. Convalescence was uneventful, and she was discharged 16 days following operation. She continued to do well and slowly gained weight until Feb. 25, 1955, when she returned to the hospital complaining of chills and fever, which had followed an upper respiratory infection. Despite antibiotics, her fever persisted, and she was readmitted to the medical service. At this time she had an elevated leukocyte count and hepatic function tests were within normal limits. The medical staff believed the patient had an ascending cholangitis, secondary to her operation. Because her febrile course continued, with little response to intensive antibiotic therapy, an exploratory laparotomy was performed. At this second operation two large masses were found in the liver. There was no obstruction referable to the previous operation, although much scarring was present. A biopsy specimen of the tumor mass in the liver showed metastatic carcinoma from the pancreas. Postoperatively her wound healed well, and three weeks later super-voltage roentgenotherapy using the betatron was begun over the area of the liver metastases. A total of 3,600 r was given over a period of two weeks. There was little subjective side-effect of the irradiation, and the patient was discharged, to be followed in the clinics.

COMMENT

Robert Elman, M.D., St. Louis

This experience illustrates several of the problems in pancreatic cancer. Operations entailing pancreatoduodenectomy are still formidable; this is particularly true with regard to cancer of the head of the pancreas. The high postoperative mortality rate and the poor long-range prognosis make this undertaking one that must be carefully planned and executed by a skillful surgeon. The reported cases of five year survivals for cancer of the head of the pancreas can easily be counted on the fingers of one hand; the results for cancer of the ampulla of Vater are somewhat better. In the face of such adverse experiences, the surgeon should have at his command all of the diagnostic assistance possible prior to completing any radical procedure. Chronic pancreatitis and carcinoma of the pancreas may mimic one another both in clinical findings and in gross appearance at operation. Frozen section at this time is mandatory, and the extensive surgical procedures necessary in pancreatoduodenectomy should not be carried out until a positive diagnosis of cancer is obtained.

In the event of a negative biopsy of the pancreas, the duodenum should be opened and the ampullary region investigated, because the obstructive lesion may arise in this location. Frozen section of the pancreas can be misleading because a tumor is often deeply situated and surrounded by a dense zone of inflammatory reaction. Carlson [1] and Probstein [2] cite examples of a radical operation on patients with only presumptive evidence of malignancy, whose lesions later proved to be benign. The pathologist should also be aware of the errors inherent in frozen section diagnoses in this region. Since the consistency, gross appearance, and degree of fixation of the suspected lesion are of little help in differentiating between pancreatitis and tumor, the surgeon is faced with the choice of a shunting procedure to relieve symptoms or a more extensive and radical resection. This choice is both difficult and important, for, despite the sporadic reports of five year survivals, it is only the more radical procedure that will give the patient a chance of an arrest of his disease if it proves to be malignant. Although the diagnosis of cancer was clearly suspected at the bedside in the case presented, the paucity of more exact methods emphasizes the need for exploration in many patients with jaundice the cause of which is otherwise difficult or impossible to determine.

It is difficult or impossible to establish the nature of a palpable pancreatic tumor found at operation to be the cause of jaundice. In this particular case the rounded, circumscribed mass was to palpation so much more characteristic of a neoplasm than the more diffuse induration of chronic pancreatitis that resection was decided on despite the negative results of the frozen section obtained by biopsy through the anterior surface of the

From the Department of Surgery, Washington University School of Medicine.

1. Carlson, R. I.: The Problem of Diagnosis at the Time of Operation in Tumors of the Head of the Pancreas, Surgery **28**: 672-679 (Oct.) 1950.

2. Probstein, J. G.: Sachar, L. A., and Rindskopf, W.: Biopsies of Pancreatic Masses, Surgery **27**: 356-359 (March) 1950.

mass. Such biopsies are not always helpful because they may be negative in the presence of a deeply lying tumor or negative in the frozen but positive in the paraffin section as in this case. The experience reported here is unusual. A positive diagnosis by frozen section was reported in 39 of the last 41 biopsy specimens removed at operation in patients subjected to pancreatoduodenectomy for pancreatic carcinoma.[3] The recommendation of the pathologist to open the duodenum was a good one and should be made more often. Duodenotomy is useful diagnostically when it reveals disease at the ampulla or ulceration of the duodenum and in this case it led to a positive diagnosis. It is not surprising that this kind of biopsy was more revealing since the center of the tumor at this site is more accessible, although the use of the long needle may have been just as important. It is also probable that far less danger attends biopsy performed from within the duodenum than that through the external surface of the pancreas. We have seen repeatedly that duodenotomy is a safe and often a rewarding maneuver during operation in selected patients with biliary tract and pancreatic disease.

The rapid downward course of this patient despite adequate excision is tragic evidence that even with early operation, a history of symptoms of short duration does not necessarily give promise of a good result but rather may mean a rapidly growing tumor and a poor prognosis. All biologists know that regardless of therapy prognosis depends largely on the variable rate of growth of cancer (or conversely the variable resistance of the patien). Thus the small localized tumor readily and widely removed early may already have metastasized, whereas the large tumor with involved but accessible regional lymph nodes may still offer a good prognosis after adequate excision. Whether undue manipulation or biopsy of the tumor in the present case accelerated the tendency toward the rapidly developing hepatic metastases cannot be proved, but it reminds us that any mechanical trauma to malignant tissue is fraught with the danger of promoting spread.

3. Bartley, T. H.: Personal communication to the author.

Anticoagulants.—The realization that the anticoagulant treatment of thromboembolic disorders is a controversial subject brings up the question for the general practitioner as to how to proceed with his treatment of acute thromboembolic accidents, especially acute coronary occlusion. . . . If he is not familiar with the action of these drugs or does not have the necessary laboratory facilities, he would be wise to abstain from their administration. If, on the other hand, he feels competent to apply such therapy he must use it discriminately, according to the condition of his patients. He may follow those authorities who have a more aggressive attitude, or others with a more conservative approach. Statements that the "omission of anticoagulants in a case of acute myocardial occlusion creates a medical liability" are just as unfortunate as remarks that "the sole reason for prophylactic use of anticoagulants is the fear of litigations." Such opinions will create confusion among the medical profession. Let us all realize that the available anticoagulants may have faults and shortcomings, but represent at this time the best approach to the treatment of thromboembolic disorders.—H. B. Eisenstadt, M.D., and B. B. Elster, M.D., Are Anticoagulants Too Dangerous for General Use? *American Practitioner and Digest of Treatment*, July, 1955.

COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

Monographs and supplemental statements on drugs that appear in this column have been authorized by the Council for publication and inclusion in New and Nonofficial Remedies. They are based upon the evaluation of available scientific data and reports of investigations.

R. T. STORMONT, M.D., *Secretary.*

Lente Insulin.—"Lente insulin is a sterile suspension, in a buffered water medium, of insulin modified by the addition of zinc chloride. Of the insulin contained in the preparation not more than 1 U. S. P. Unit of insulin per milliliter is in solution, approximately 70 per cent is crystalline, and the remainder is amorphous. Zinc-insulin crystals are used in such quantity that each milliliter of the preparation, when the precipitate therein is brought into uniform suspension, contains either 40 or 80 U. S. P. Units of insulin. The preparation contains, for each 100 U. S. P. Units of insulin not less than 0.20 milligram and not more than 0.25 milligram zinc (of which not less than 40 per cent nor more than 65 per cent is in the supernanant liquid), and not more than 0.65 milligram nitrogen. The preparation also contains not less than 0.15 per cent and not more than 0.17 per cent (w/v) sodium acetate, not less than 0.65 per cent and not more than 0.75 per cent (w/v) sodium chloride, and not less than 0.09 per cent and not more than 0.11 per cent (w/v) methyl-*p*-hydroxybenzoate. The pH of the finished product is not less than 7.1 nor more than 7.5." Certification of Batches of Drugs Composed Wholly or Partly of Insulin (19 Fed. Reg. 4153 [July 8] 1954).

Actions and Uses.—Lente insulin is a mixture of minute particles consisting of approximately 70% crystalline zinc insulin and 30% amorphous zinc insulin, each component of which has a sufficiently high zinc content to make the mixture relatively insoluble at the pH of the blood. The proportion of the components provides an antidiabetic action that is intermediate in time between that of unmodified (regular) insulin and protamine zinc insulin. The time of action of lente insulin so closely approximates that of the modified protamine zinc insulin, isophane (NPH) insulin, that they can be used interchangeably. The onset of action of lente insulin is sufficiently prompt to control the after-breakfast rise in blood sugar, and its duration of activity is usually adequate to maintain blood sugar levels during fasting without the need for supplementary injections. Lente insulin, which contains no foreign modifying protein, is free from the possibility of producing local sensitivity reactions attributed to protamine or globin. Since lente insulin differs clinically from unmodified insulin only in its more prolonged action in lowering the blood sugar, its administration and dosage should follow the same principles that govern the use of insulin in general; however, lente insulin is not adaptable for use in place of unmodified insulin in dealing with

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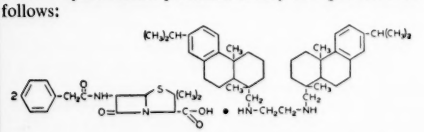
diabetic emergencies that require immediate-acting intravenous insulin. (Also see New and Nonofficial Remedies 1955, under the general statement on insulin.)

Dosage.—Lente insulin is administered as a buffered suspension by deep subcutaneous injection. It should not be injected into underlying muscle and is never administered intravenously. The container vial should be rotated and inverted several times to insure uniform distribution of the suspended particles, but vigorous shaking and frothing should be avoided. The potency is expressed in terms of insulin units per cubic centimeter of suspension. The number and size of daily doses, time of administration, diet, and exercise must be determined by careful observation under laboratory control, with frequent blood sugar estimations and urinary sugar examinations in each individual case. Usually the most satisfactory time for injection is in the morning before breakfast. In newly developed, uncomplicated cases of average severity, an initial daily dose of 10 units may be administered before breakfast; this may then be increased by 3 to 5 units until proper control of blood and urinary sugar is achieved. In patients already under treatment with protamine zinc insulin or unmodified insulin or both, a beginning dose of lente insulin of approximately 20% fewer units may be substituted; this is then increased if necessary. Patients on isophane insulin may be transferred directly to lente insulin on a unit-for-unit basis. In certain severe cases, further regulation of diet may be important to obtain the optimum dosage level. As with protamine zinc insulin, the proportional distribution of food of one-fifth, two-fifths, and two-fifths respectively for the three meals may be advantageous. Afternoon and bedtime feedings may become desirable or necessary in some circumstances at the discretion of the physician.

Suspensions of lente insulin should be stored in a cold place, preferably a refrigerator. Exposure to freezing or high temperatures should be avoided. Vials in use also should be protected from strong light and the contents used as continuously as possible. A partially empty vial not used for several weeks should be discarded. A vial in which the precipitated suspension has become clumped or deposited on the wall of the container should not be used.

Eli Lilly & Company cooperated by furnishing scientific data to aid in the evaluation of lente insulin.

Hydrabamine Penicillin G.—Hydrabamine penicillin G is a mixture of crystalline penicillin G salts consisting chiefly of the salt of N,N′-bis-(dehydroabietyl)ethylenediamine, with smaller amounts of the salts of the dihydro- and tetrahydro-derivatives. The structural formula of hydrabamine penicillin G may be represented as follows:



Actions and Uses.—Hydrabamine penicillin G, a water-insoluble dipenicillin compound salt of a rosin amine base, is useful in the treatment and prevention of penicillin-susceptible infections. (See New and Nonofficial Remedies 1955, under the general statement on penicillin.) Its prophylactic use should be limited to streptococcic and pneumococcic infections of the throat and ears, to procedures such as tonsillectomy and dental extractions, and to patients with a history of rheumatic fever or rheumatic heart disease. As with other penicillin compounds, it is of no value for the treatment or prevention of the common cold or influenza.

Given orally, hydrabamine penicillin G promptly produces satisfactory penicillin blood levels when administered in doses of 300,000 to 600,000 units at 6 hour intervals. After 6 hours, the blood level produced by similar single oral doses falls rapidly. The onset of the maximum blood level produced by single oral doses is only slightly delayed when administered with meals, and the height and duration of the blood level is not affected appreciably by digestive function. Median blood levels obtained following oral administration of 600,000 unit doses are approximately twice those obtained with 300,000 unit doses. Animal studies indicate that the hydrabamine base portion of the compound is chiefly unabsorbed when given by the oral route; up to 90% is recovered in the feces with less than 1% found in the urine. Fecal excretion of the base is not significantly influenced by the normal intestinal flora.

Hydrabamine penicillin G has about the same toxicity in animals as benzathine penicillin G. Chronic toxicity studies in animals with doses far in excess of those recommended for human beings have not disclosed hematological or other abnormalities. Clinically, looseness of stools has been observed as a rare side-effect and urticaria has been attributed to the drug. Physicians should be alert to the possibility of allergic reactions, stomatitis, or monilial infection of the gastrointestinal tract. As with other penicillin compounds, allergic reactions may be controlled with antihistamine medication, but when this fails or when there are monilial complications, the drug should be discontinued.

Dosage.—Hydrabamine penicillin G is administered orally for acute infections in initial doses of 300,000 to 600,000 units every 6 hours for adults; subsequent dosage should be regulated according to the therapeutic response. In children, oral doses of 300,000 to 600,000 units four times daily may be adequate. To maintain continuous prophylaxis in rheumatic fever, approximately 300,000 units orally once or twice daily is suggested; patients with streptococcic infections who have had rheumatic fever or show signs of rheumatic heart disease should receive a total of 800,000 to 1,200,000 units per day (a smaller amount for children, larger for adults) in four divided doses for the first 5 days, and 600,000 to 750,000 units per day in three divided doses for the second 5 days. The entire 10 day treatment should be administered to such patients even though fever or symptoms disappear before the end of this period.

Abbott Laboratories cooperated by furnishing scientific data to aid in the evaluation of hydrabamine penicillin G.

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ECONOMICS OF MEDICAL CARE SINCE 1929

Elsewhere in this issue (page 41) is the first part of a two-part review of the economic position of medical care over the past quarter century by the A. M. A. Bureau of Medical Economic Research. The findings emphasize the "middle ground" position of the medical care "industry" during that period, 1929-1953, when gross national product rose from 104 billion to 365 billion dollars and personal consumer expenditures rose from 79 billion to 230 billion dollars. While dollars expended for medical care followed the over-all pattern of expansion, the Bureau notes that since 1930 the percentage of personal consumer expenditures going for medical care varied only slightly, from 3.99 to 4.35. Since World War II, however, the percentage has risen at a more rapid rate, from 4.14 to 4.35.

One factor that increased personal consumer expenditures for medical care, in dollars and as a percentage of the total, was the tremendous upswing since World War II in the number of births and the birth rate. The increased number of babies and young children has affected not only hospital and obstetric expenditures but has increased the demand for other medical services, since this youngest age group normally requires the most frequent medical attention. In the long run, of course, this imbalance will be corrected as today's toddlers become tomorrow's productive adults. Moreover, the reduction of the maternal mortality rate to a very low level has contributed to the high birth rate by reducing the mortal fear of childbearing almost to the vanishing point. The economic effect of the 1,200,000 increase in births from 1945 to 1953 has been obscured by statistics that do not show a division of medical expenditures into those for childbearing, disease, and accidents. Without such a breakdown, it is easy to misinterpret the increase in medical expenditures by ascribing it to a decline in the health of the American people or a disproportionate rise in medical care costs. The Bureau study has isolated as a second factor responsible for the increase in expenditures the item "medical care and hospitalization insurance." These expenditures represent premiums less claims paid; this difference is primarily overhead cost. The rapid growth in voluntary health insurance has resulted in an increase of 779 million dollars in this insurance overhead item from 1929 to 1953; this amount represents one-ninth of the total 7,064 million dollar increase for all medical care items. The increase in overhead costs is, of course, a price that must be paid for the rapid extension of voluntary health insurance.

Turning from expenditures to prices, the Bureau notes that the index for medical care and drug prices, as indicated by the U. S. Bureau of Labor Statistics' Consumer Price Index, (1935-1939 equal 100), stood at 173.9 in 1954—well below the 191.9 for the entire Index. The item indexes for physicians' and dentists' fees were still lower—160.3 and 174.5. The only component of the total medical care and drug index that showed a marked rise was hospital room rates, which was 322.1 in 1954; if the upward effect of this component were eliminated, the over-all medical care and drug index would be still lower. Newspaper releases about monthly changes in the cost of living usually refer to indexes based on the period 1947-1949 equal 100. This study points out that the new base indexes for some items, such as men's street shoes and women's cotton house dresses falsely imply that the prices of these items have not risen very high, whereas the true explanation is that they attained a very high level before 1949. Other items, such as rent and medical care, appear to be high priced because their price rise came so late in this 15-year period of inflation. However, this does not deny that the indexes for the medical and hospital items have risen more rapidly since 1949 than the entire Consumer Price Index.

A dollar spent for medical care in 1953 was not divided among the suppliers of these services and commodities in the same way as was a 1929 dollar. The 33 cents that the physician received in 1929 dwindled to 28 cents by 1953; the share of the dentist and that for drugs and sundries also declined. The compensatory increases were for all other medical care (which includes the rapidly growing insurance overhead item) from 17 to 20 cents; and for hospitals, from 14 to 26 cents. If these trends continue, the hospitals' share will exceed the physicians' share by 1960. The sharp rise in productivity, or output per physician, has counterbalanced the lag in physicians' fees and the decline in the physicians' share of the medical care dollar. Thus, the effective supply of physicians' services has increased much more rapidly than the number of physicians. Also, seeing a decreasing percentage of patients in their homes has resulted in a saving of the physician's time. Use of more auxiliary personnel in his office and in the hospital and use of more effective drugs have also been major factors in increasing the technological efficiency of the physician. As a result, the average income of physicians rose at almost exactly the same rate as the average earnings of all wage and salary workers over the period. From 1929 to 1949 the percentage rise was 108 compared to 109; and for 1949 to 1951, 13 compared to 15. Estimates indicate no change in this trend since 1951. The incomes of physicians and their patients continue to keep pace.

The various providers of services and commodities in the medical care "industry" can well be proud of a quarter century record that included great medical advances—the increased life expectancy at birth, the declines in infant and maternal mortality, and the development of new drugs and treatments—while little change occurred in the industry's relative economic position. Possibly this is our most efficient industry!

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COMPONENT MEDICAL SOCIETIES

The American Medical Association Bureau of Medical Economic Research has recently published the results of a statistical survey of the 1,929 component medical societies in the 48 states. This 81-page study, known as Miscellaneous Bureau Publication M-95, "Component Medical Societies: Membership and Boundaries," is a compilation and interpretation of information furnished by the executive secretaries of the state medical associations. It includes a 72-page list by state of the name of the component society, the name or names of the counties included, the number of counties, and the membership; the summary at the end of each state list includes a membership array in descending order, the names (if any) of the unorganized and inactive counties, the total number of counties in the state, and the number of component societies. Membership of the component societies in 1954 totaled 156,598. This number should not be confused with the total membership of the state associations because of the variations in membership rules of the component societies; for example, the retired members in some component societies are not members of the state associations but continue to be members of their component societies. One-third (52,157) of this total membership was accounted for by the 24 largest component societies, each of which had more than 1,000 members in 1954; the 244 societies that had between 100 and 1,000 members had a total of 63,997, or 40.9% of the total; the remaining 40,444 members, or 25.8% of the grand total, were distributed among the 1,661 societies comprised of less than 100 members. There were 209 societies with 50 to 99 members; 102 societies had 40 to 49 members; 161 had 30 to 39; 253 had 20 to 29; 534 had 10 to 19; and 402 had fewer than 10 members. More specifically, 127 societies had less than five members and 275 societies had from five to nine members. The purpose of this compilation is not to discount the importance and need for component societies with few members.

A county outline map of the United States with four shaded patterns is a part of the Bureau publication. Shaded patterns indicate that 1,526 of the component societies cover just one county or less, 176 societies cover 2 counties, 154 societies cover more than 2 counties but fewer than 5, 64 societies cover 5 to 10 counties, and 7 cover 11 or 12 counties. At the extreme are two component societies—one in Mississippi and one in Virginia—that cover 13 counties each; 158 counties are unorganized, and 11 counties are inactive. There is a component society for each county in only seven states—Alabama, Arizona, Connecticut, Delaware, New Hampshire, New Jersey, and Ohio. At the other extreme are only three states with no single county society—Nevada, North Dakota, and South Dakota. The geographical patterns of these component societies along with the membership data may profitably be compared with the 757 medical service areas shown in Bureau Bulletin 94, "Distribution of Physicians by Medical Service Areas," and Bulletin 94A, "Map Supplement to Bulletin 94." The latter reflect the trading area principle, whereas the boundaries of component societies are political and were established many years ago. Although it would be outside the scope of any Bureau publication to urge a regrouping of component medical societies, comparisons with the 757 medical service areas and the data in this new Bureau publication will provide the officers of our constituent associations and component societies with a considerable amount of basic information for other states.

ESTABLISHING NEW PRACTICES

The physician seeking to take advantage of opportunities made possible by our growing suburban and small-city populations faces the problem of reconciling the financial obstacles with his professional and community-service goals. Local financing through banks and supply company credit often fall short of the working capital needs of a new practice, particularly for the young physician who lacks managerial "know-how." The American Medical Association and other organizations have stimulated communities seeking young physicians to offer personal and professional advantages such as a home or office facilities. Much progress has been made through these activities, but the financial problem is less easily tackled and solved. It poses further complications —that of aiding the physician but avoiding a "handout," and that of getting him started without putting him under obligations that may hamper his freedom in the practice of medicine. The Sears-Roebuck Foundation, with the cooperation and guidance of the A. M. A., has launched a program of assistance designed to encourage new medical practice units and improve medical care without threatening medical autonomy.

The foundation's Plan of Assistance (see this issue, page 38) will provide long-term, low-cost unsecured loans of up to $25,000 to physicians seeking to establish medical practice units. It requires that the physician first exhaust all local possibilities for financing, that his application indicate a need for a practice in the proposed locality and good possibilities for success and public service, and, that it give evidence of effort and thought in planning a well-organized, effective practice unit. Contributions made by the grantee in repaying the grant will be turned back into the fund for the establishment of further practices, thus providing what the foundation calls "built-in chain reaction." The plan also features advantages encouraging early repayment of grants to speed up establishment of more practices.

The foundation states that its plan is intended to "realize the principles of opportunity, incentive, mutual help and self reliance; to give the American people the best possible medical care; and to help the American physician build for himself the most effective, the most rewarding and the most satisfying life as a professional man." Continuation of the plan after 1955 depends on its reception and support by the medical profession. The plan relies on individual initiative and enterprise, requires that assistance be given only where it will generate independence, and is sustained entirely by those who benefit from it. As a proof that free medicine and free industry can solve medicoeconomic problems in a practical but optimistic way, it deserves support. As a proof that there are means of improving medical care without compromising medical self-reliance, it demands support.

ORGANIZATION SECTION

"NEW PRACTICE" ASSISTANCE GRANTS OFFERED

The Sears-Roebuck Foundation, in cooperation with the American Medical Association, has announced a new Plan for Assistance in establishing medical practice units with loans of up to $25,000, beginning in 1955. The unsecured, low-cost, 10-year loans will be available to physicians seeking to establish new practices but unable to arrange full local financing. The loans, intended especially for small or medium-size towns, growing suburbs, or rural communities, will be offered to physicians in at least one location in each of five regions covering the United States. Applications will be screened by a medical advisory board selected from A. M. A. Board of Trustees nominations. Investigations and the physician's application will provide the advisory board with information on these questions: Is the proposed location of the unit logical? What will it bring to its community? What is its chance of success? How much initiative has the applicant?

Under the terms of the note, payments of $12 a month per $1,000 borrowed are due after three years and must continue until repayment is complete. Accelerated payments may be made. Recipients also must pledge themselves to make a $240 tax-free contribution to the Sears-Roebuck Foundation for each $1,000 borrowed. Payments may be made at any time but must begin after the fifth year, at a rate of $2 per month per $1,000 for the fifth year; $3 a month for the sixth and seventh years, and $4 a month for the last three years. All money returned to the foundation will be used to help establish new practices. Two features are planned to encourage early repayment, so that these additional grants may be made: 1. As long as no repayments are being made on the principal—up to three years—interest at the rate of 6% per year ($5 a month per $1,000) is charged. Interest is canceled as soon as repayments begin. 2. All pledges are to be spread over the last six years of the term, but those not yet due will be canceled if the grant is repaid before 10 years. Grantees also must be covered by decreasing term life insurance with any insurance company for the amount of their grants excluding pledges.

Further information may be secured from the physician's placement office of the nearest state medical society, or from the Council on Medical Service, American Medical Association, 535 N. Dearborn, Chicago. Applications must be sent to the Director, Sears-Roebuck Board, in the region where the proposed practice would be located. The regional addresses are: Pacific Coast—2650 Olympia Blvd., Los Angeles 54; Southwest—1409 S. Lamar St., Dallas 2; Midwest—8 E. Congress St., Chicago 5; South—675 Ponce de Leon Ave., Atlanta, Ga.; East—4640 Roosevelt Blvd., Philadelphia 32.

This plan was formulated by the recently created medical advisory board of the foundation. The board is headed by Dr. F. J. L. Blasingame, Wharton, Texas, chairman, and Dr. Edwin S. Hamilton, Kankakee, Ill., vice-chairman, who, together with Dr. James R. McVay, Kansas City, Mo., are members at large. Regional members are Drs. Samuel P. Newman, Denver, Midwest; James Z. Appel, Lancaster, Pa., East; David Henry Poer, Atlanta, Ga., South; Eugene F. Hoffman, Los Angeles, Pacific Coast; Robert D. Moreton, Fort Worth, Texas, Southwest; Drs. J. A. Bargen, Rochester, Minn.; Lawrence R. Dame, Greenfield, Mass.; J. P. Culpepper, Hattiesburg, Miss.; Raymond M. McKeown, Marshfield, Ore.; and Alfred R. Sugg, Ada, Okla. Ex-officio members are Drs. Elmer Hess, Erie, Pa., A. M. A. President; Gunnar Gundersen, LaCrosse, Wis., Chairman of the Board of Trustees; and Dwight H. Murray, Napa, Calif., President-Elect.

SYMPOSIUM ON HEALTH HAZARDS OF CHEMICALS

The A. M. A. Committee on Toxicology and the Committee on Pesticides will sponsor a symposium on the health hazards of chemicals in the home, agriculture, and industry during the annual meeting of the American Association for the Advancement of Science. The symposium will be held before the section on pharmacy, Dec. 29 in the Henry Grady Hotel, Atlanta, Ga. There are about 25,000,000 chemical products now available for use in the three fields to be discussed, and it is estimated that 3,300 deaths occur annually from misuse of chemicals. The committees have gathered a panel of experts to discuss the problem before scientists from many fields. Bernard Conley, Secretary of the A. M. A. Committee on Pesticides, will be moderator. The symposium members will include Dr. Lester M. Petrie, director of the preventable disease service, Georgia Department of Health, Atlanta, Ga.; Dr. Wayland J. Hayes, chief, toxicology section, Communicable Diseases Center, U. S. Public Health Service, Savannah, Ga.; Dr. Irvin Kerland, associate medical director, federal Food and Drug Administration, Washington, D. C.; and Mrs. Veronica Conley, Assistant Secretary, A. M. A. Committee on Cosmetics.

A STUDY OF MULTIPLE SCREENING

The Council on Medical Service of the A. M. A. has just revised its pamphlet on multiple screening. The present report includes descriptions of 33 multiple surveys in 14 states and the District of Columbia, ranging from small surveys in a single company to statewide projects. Costs and results have been given when such information was available. Copies can be had by writing to the Council on Medical Service, 535 N. Dearborn St., Chicago 10.

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FEDERAL MEDICAL LEGISLATION

First Session, 84th Congress

Military Dependents' Medical Care

Senators Russell (D., Ga.) and Saltonstall (R., Mass.), in S. 2720, and Congressman Vincent (D., Ga.), in H. R. 7792, introduced the administration's proposal "to provide medical care for dependents of members of the Armed Forces of the United States." This replaces S. 934 and H. R. 2685 previously reported. The legislation follows the basic recommendations of the 1953 Molton committee and would authorize medical care for dependents of the members of the armed services. "(*a*) in military medical facilities subject to the availability of space, facilities, and capabilities of the medical staff; (*b*) through an insurance plan . . . and (*c*) from civilian medical sources . . . for dependents of members of the Armed Forces not participating in an insurance plan. . . . Provided that no military medical facilities are available for such dependents." The measure specifically states that: "The medical care of dependents of members of the Armed Forces provided for in military medical facilities shall in no way interfere with the primary mission of the military medical services to provide proper medical care for military personnel. The Secretary of Defense may establish charges for any subsistence given dependents of members of the Armed Forces in connection with medical care in military facilities. (*c*) As a restraint on excessive demands for medical attention in military medical facilities, additional charges may be imposed for out-patient care but such charges shall be limited to such amount, if any, as may be established by the Secretary of Defense pursuant to a special finding that such charges are necessary. . . ."

"Sec. 5. The Secretary of Defense is authorized to contract for the medical care, under the provisions of this Act, of dependents of members of the Armed Forces, under such private insurance plan or plans as he shall deem appropriate, subject to the following limitations: (*a*) Members of the Armed Forces shall be entitled to participate in such plan or plans upon filing of an application to participate on forms provided by the Department of Defense. (*b*) The cost of each private insurance contract shall be apportioned between the member of the Armed Forces and the Government. The contribution by the member of the Armed Forces shall not exceed 30 per centum of the monthly cost and not to exceed $3 per month estimated at the time of his filing of a request to participate in such a plan. (*c*) Members of the Armed Forces may select such optional coverage as such plan shall provide. (*d*) Payment by a member of the Armed Forces of his share of the cost of the premium of such private insurance contract shall be by allotment of pay as the Secretary of Defense shall prescribe. (*e*) Such private insurance plan shall not provide for any limitation on periods of authorized medical care for dependents of members of the Armed Forces for each accident or illness. (*f*) The Secretary of Defense, in contracting for such insurance plan or plans, shall provide for a reduction of the costs to the extent that dependents of members of the Armed Forces participating in such plan are cared for in military medical facilities. (*g*) The charges for medical care rendered under such private insurance plan by civilian physicians and surgeons and hospitals and treatment facilities under civilian control shall not be at rates in excess of the physician's, surgeon's, hospital's, or treatment facility's standard schedule of charges for semiprivate accommodations to the general public or to group-insurance patients (whichever is lower) for the services rendered.

"Sec. 6. Dependents of members of the Armed Forces who do not elect to participate in an insurance plan as authorized under section 5 of this Act and who are in need of medical care, for which military medical facilities are not available, because of inaccessibility, lack of space, facilities, or capabilities of the medical staff, are authorized to receive medical care as provided in this section for duly licensed physicians and facilities under civilian control. However, no funds shall be expended for professional service except in accordance with schedules of maximum fees and costs for such professional service established by the Secretary of Defense. He may consult with accredited medical associations and any other agencies which he considers appropriate. The payment for services rendered by hospitals and clinics shall be at rates not in excess of the hospital's or clinic's standard schedule of charges for semiprivate accommodations to the general public or to group-insurance patients, whichever is lower, for the service rendered. As a restraint on excessive demands for medical care, dependents receiving medical care in civilian medical facilities, under the terms of this section, shall be required to pay 30 per centum of the first $100 plus 15 per centum of the cost of the remainder of inpatient care and 30 per centum of the cost of outpatient care. However, in cases of protracted periods of illness or other hardship cases, the Secretary of Defense may provide for the transfer of such dependent to a military facility or take such other appropriate action to alleviate such hardship.

"Sec. 7. As used in this Act—(*a*) The term 'member of the Armed Forces' includes—(1) a person, appointed or enlisted in, or inducted, called or conscripted into, the Army, Navy, Air Force, or Marine Corps, or members of the reserve components who have entered on extended active duty in excess of ninety days but not including persons on duty for training purposes only; and (2) a member or former member of the Army, Navy, Air Force, or Marine Corps, who is entitled to retirement . . . other than those entitled to receive retired or retirement pay [as members of the Reserve]" and those nonregular officers of the Army, Navy, and Marine Corps placed on the emergency retired list under the act of May 24, 1928, as amended, by reason of disability incurred in World War I and their dependents who are furnished medical care by the Veterans Administration.

"(*b*) The term 'dependent' includes—(1) in the case of any male member—(A) his lawful wife; (B) his unmarried dependent children. The term 'children' shall in addition to the members' own or lawfully adopted children include stepchildren, or such other children as depend upon the member for support and live with the member in a regular child-parent relationship; children shall not be included in the term 'dependent' who are over the age of twenty-one years, except such children who are incapable of self-support because of being mentally or physically incapacitated and who are in fact dependent on the member for over half of their support; (C) his parents and parents-in-law if in fact dependent on him for over half of their support; and (2) in the case of any female member—(A) her lawful husband, if in fact dependent on her for over half of his support; (B) her unmarried dependent children. The term 'children' shall in addition to the members' own or lawfully adopted children include stepchildren, or such other children as depend upon the member for support and live with the member in a regular child-parent relationship; children shall not be included in the term 'dependent' who are over the age of twenty-one years, except such children who are incapable of self-support because of being mentally or physically incapacitated and who are in fact dependent on the member for over half of their support; (C) her parents and parents-in-law if in fact dependent on her for over half of their support; and (3) unmarried widows and the dependent children of persons who were members of the Armed Forces, as defined in this Act, at the time of death are authorized medical care under the terms of this Act.

"Sec. 8. Medical care under this Act shall be limited to the following: (*a*) Diagnosis; (*b*) Treatment of acute and medical and surgical conditions; (*c*) Treatment of contagious diseases; (*d*) Immunization; and (*e*) Maternity and infant care.

"Sec. 9. Hospitalization shall not be authorized dependents of members of the Armed Forces for the following: (*a*) Domiciliary care and chronic diseases; (*b*) Nervous and mental disorders (except for diagnostic purposes); and (*c*) Elective medical and surgical treatments as determined by the cognizant physician.

"Sec. 10. (*a*) Dependents of members of the Armed Forces shall not be provided prosthetic devices, hearing aids, orthopedic footwear, and spectacles, except that outside the continental limits of the United States and at remote stations within the continental limits of the United States where adequate civilian facilities are not available, those items, if available from military stocks, may be provided to dependents at prices representing full cost to the Government. (*b*) Dependents of members of the Armed Forces shall not be provided—(1) ambulance service,

From the Washington Office of the American Medical Association.

except in acute emergency, and (2) home calls except in special cases where it is determined by the cognizant physician to be medically necessary.

"Sec. 11. Except outside the continental limits of the United States and in remote areas within the continental limits of the United States where adequate civilian dental facilities are not available, dental treatment for dependents of members of the Armed Forces will be restricted to emergency dental care and dental care as a necessary adjunct to medical or surgical treatment. Emergency dental care is defined as the care required to relieve pain and suffering and shall not include any permanent restorative work or dental prosthesis. Dental treatment which may be provided dependents of members of the Armed Forces under this section will be obtained in military dental facilities and will depend upon the availability of space, facilities, and capabilities of the dental staff. Dependents of members of the Armed Forces are not authorized dental care at government expense through civilian dental sources, except as a necessary adjunct to inpatient medical or surgical treatment."

The Assistant Secretary of Defense in transmitting the legislation to Congress said that further technical improvements "in all probability may be proposed such for example, as the coverage of widows and the dependents of decreased military personnel and the extent to which military personnel may be authorized on their own option to move in and out of insured status." The annual cost for 2,204,500 dependents as of Dec. 31, 1954, would be 76 million dollars. These measures were referred to the Committee on Armed Services.

Federal Employees Contributory Health Insurance

Senator Johnston (D., S. C.) and Senator Carlson (R., Kan.), in S. 2425, and Congressman Rees (R., Kan.), in H. R. 7241, have introduced the administration's proposal for voluntary contributory health insurance for federal civilian employees. The employee would have the choice of two types of coverage: local nonprofit plans furnishing health services, employee-sponsored plans, or indemnity plans, providing 75% of the employees in the particular operation enroll in such a plan (Blue Cross and Blue Shield could qualify in this category); or a uniform national indemnity plan contracted for by the Civil Service Commission.

The federal government's contract in either plan would be limited to one-third of the premium of $52 a year for employees with dependents, or $19.50 for single employees, whichever is less. Under the uniform plan the cost to a single employee could not exceed $39 a year, and for an employee with dependents the cost could not exceed $104 a year. The uniform policy would provide daily board and room, with the benefit not to exceed $15 for each day of hospital confinement not exceeding 70 days. Additionally, $300 would be allowed for other hospital services and supplies. Maximum maternity benefits would be $125 for pregnancy in lieu of all other hospital benefits. Surgical benefits would be limited to $250. Major medical cost insurance would also be available with a $10,000 limit. The employees would have to meet the first $100 of expense after expiration of basic benefits before the major medical cost policy would become effective, after which they would be assessed 25% of the costs, with the policy paying a maximum 75% or $10,000, whichever is less. The Civil Service Commission would have the right to approve any participating insuring program and its health service benefits. An advisory board of 5 to 11 federal employees appointed by the chairman of the Civil Service Commission would advise policy. These measures were referred to the Committee on Post Office and Civil Service.

Veterans' Medical Care

Senator Smith (R., N. J.), in S. 2406, Senator McCarthy (R., Wis.), in S. 2483, and Congresswoman Church (R., Ill.), in H. R. 7355, have introduced identical measures to carry out part of the Hoover commission's recommendations on federal medical services. All appropriations for general hospitals for the Veterans Administration would be rescinded, except where construction has actually begun or where a contract has been executed. Authorization would also be rescinded if no appropriations have been made. The veterans' signed statement of inability to pay for hospital care for non-service-connected illness or disability would be subject to verification by the Veterans Administration and if found "not to be substantiated, such administration is authorized to collect the amount of the medical costs incurred, together with any amount paid in connection therewith for transportation of the veteran to and from the Veterans Administration facility, in such manner as the Administrator shall prescribe."

Veterans would be requested to assume an obligation to pay the cost without interest at some future date if they are financially able to do so. For hospital or domiciliary care for disease or disability not due to military service, the Veterans Administration would be "authorized to furnish out-patient treatment and care, prior to or following hospitalization, to any veteran of any war who was not dishonorably discharged, who is suffering from disability, disease or defect (not including neuropsychiatric ailments prior to hospitalization), who is in need of outpatient dispensary care, and who is unable to pay therefore, irrespective of whether the disability, disease, or defect was due to service. Any veteran who receives such out-patient treatment or care shall be required to assume an obligation for the future payment of the costs thereof," if the disease or injury was not service-connected. The Senate bills were referred to the Committee on Labor and Public Welfare; the House bills were referred to the Committee on Veterans' Affairs.

Federal Hospital Service Other Than Military

Senator Smith (R., N. J.), in S. 2407, Senator McCarthy (R., Wis.), in S. 2481, and Congresswoman Church (R., Ill.), in H. R. 7346, have introduced identical measures to carry out part of the recommendations of the Hoover commission Report on Federal Medical Services. Major provisions are: (1) American merchant seaman "shall no longer be entitled, in accordance with regulations, to medical, surgical, and dental treatment and hospitalization without charge at hospitals and other stations of the Public Health Service"; and (2) Coast Guard, the Coast and Geodetic Survey, and Public Health Service personnel would be provided medical, surgical, and dental treatment and hospital care only at the nearest available facilities of the military medical services. Medical advice, outpatient treatment, and hospitalization furnished to the dependents of the Coast Guard, Coast and Geodetic Survey, and Public Health Service would be "reimbursed by the agency whose personnel or dependents thereof received such treatment or hospitalization to the extent that such cost is not charged to the officer, enlisted person, or member of a crew concerned."

Medical, surgical, hospital services for the Bureau of Employees Compensation, supplied now at the Public Health Service institutions, would be provided in hospitals other than veterans, with costs reimbursed by the Department of Labor. As soon as practicable the surgeon general would close all veteran hospitals of the Public Health Service and all "other institutions, clinics, stations, and facilities thereof, except (1) those used for the care, detention, and treatment of narcotic addicts and persons afflicted with leprosy, mental illnesses, or tuberculosis, (2) facilities for the care of Indians, (3) Freedman's Hospital, (4) those used for research activities, including the National Institutes of Health, and (5) the clinics and other facilities necessary for making the medical examinations authorized for Federal employees and . . . for making the physical and mental examinations of aliens. . . . Any hospitals and other institutions, clinics, stations, or facilities which are closed as herein provided may be disposed of to the States or local communities or in such other manner as the Surgeon General may prescribe." The Senate measures were referred to the Committee on Labor and Public Welfare; the House measure was referred to the Interstate and Foreign Commerce Committee.

Mortgage Insurance for Nursing Homes

Congressman Priest (D., Tenn.), in H. R. 7608, would authorize federal mortgage loan insurance for construction of nursing homes both nonprofit and proprietary. The mortgage insured could not exceed 80% of the estimated value of the property. The reinsurance would not exceed 95% of the loan, and the loan could not exceed 30 years. The provisions are similar to those of Title II of the administration's omnibus health bill, S. 886 and H. R. 3458. This measure was referred to the Interstate and Foreign Commerce Committee.

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BUREAU OF MEDICAL ECONOMIC RESEARCH

This survey of the economic position of medical care during a quarter century will be concluded in next week's issue of THE JOURNAL. *It will be reprinted, with additions, by the Bureau of Medical Economic Research as Bulletin 99; a copy may be obtained from the Bureau, 535 N. Dearborn, Chicago 10.*—ED.

THE ECONOMIC POSITION OF MEDICAL CARE, 1929-1953

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The recent publication of "National Income," 1954 edition (a supplement to the *Survey of Current Business*), by the United States Department of Commerce warrants a review of the position of medical care in the American economy during the quarter century covered by the data in this new publication, 1929-1953. Previous publications of the Bureau of Medical Economic Research have summarized the national aggregates for medical care for the years 1929-1952. (A list of these Bureau publications by title is presented in Bureau publication M-90.) The new series makes minor changes for the earlier years and presents new data for 1953.

The American economy has undergone so many changes during the past quarter century that an attempt to treat medical care in isolation would be unsuccessful. Yet, even a reasonably satisfactory thumbnail sketch of the economic development of the United States is far beyond the scope of this article. We shall try instead to provide some answers to the following questions regarding the position of medical care in a changing economy: 1. What are some of the highlights in the expansion of the American economy during this quarter century? 2. What does the Department of Commerce mean by the term "personal consumer expenditures?" 3. What is the largest item of personal consumer expenditures? 4. What is meant by the term "personal consumer expenditures for medical care?" 5. How much was spent annually for medical care, 1929-1953, and how do these amounts compare with other expenditures and with total personal consumer expenditures? 6. How has the composition of the medical care dollar changed? 7. Have medical care prices since 1935 risen more rapidly or less rapidly than the prices of commodities and services widely purchased by consumers? 8. Have the average weekly wages of industrial workers risen less rapidly or more rapidly since 1935 than the cost of specified items of medical care? 9. Have the average incomes of physicians risen more rapidly or less rapidly than the average incomes of the gainfully employed? 10. Have the technological efficiency—"output per physician"—and improvements in the quality of medical care kept pace with comparable changes in other parts of the American economy?

Introduction

The 25-year period for which medical care costs are analyzed here is one-quarter of that century that may well go down as the hundred years of most rapid change in recorded civilization. The changes in medical care are an integral part of this vortex of change. The people have retained most of their freedom to make individual decisions as to which of the many desired material things or services they will place first, second, and third in their priorities. The purchase of medical care can, therefore, be discussed in meaningful fashion only in relation to other purchases. The kind of medical care that is now being purchased, in contrast to the medical care of 1929, can only be fully appreciated when considered along with other major changes in the pattern of consumer expenditure. Most of the significant changes, as assessed from the vantage point of the present, were not, of course, foreseen in 1929. Some very well qualified people prognosticated, in the year 1929, a maximum United States population of less than 150 million persons. Yet the tremendous, and wholly unanticipated, growth of the United States population since 1929 is probably the most outstanding feature of this quarter century (from 122 million to 158 million in 1953). Along with this great increase of 30% in population, there have been changes in the age composition. The number of people age 65 and over has increased by leaps and bounds. In the medical field this has meant the rise of a new specialty, geriatrics. It has also meant the development of many social and economic activities focused upon the elderly and/or retired person.

Linked to the increase in numbers of people have been two other changes of great significance: first, the increase in the proportion of the United States population living in urbanized areas and the concomitant increase in the numbers of these persons who are dispersed in the suburbs of metropolitan centers; and, second, the well-known developments in the amount and speed of all kinds of transportation, but especially the increase of 101% since 1929 in numbers of automobiles. Both of these linked developments were, of course, well under way in 1929. They were intimately tied up with the processes of specialization and centralization, characteristics not only of industry but also of the newer brand of agriculture. City boundaries burst at the edges, and population flowed into the outskirts. The suburb—with its white picket fences, its elementary schools, its shopping centers, and its physicians' and dentists' offices—came into full bloom. So marked was this outward thrust of city workers that it was necessary for the United States Bureau of Census to change its definition of "urban population"; 64% of the total population of the United States in 1950 was urban.

The development of diverse forms of transportation in this process of urbanization has profoundly affected the distribution of medical care. The great bulk of patients developed the habit of going to their personal physicians' offices, from where they were funneled, by the system of referrals, to the specialist in the adjacent office, to a nearby clinic, to a perhaps more distant hospital or to a great medical specialty center several air hours away. All of these developments have enabled the medical team of 1953 to handle more patients more successfully than was done in 1929.

ECONOMIC GROWTH

The most important economic events of the 25-year period are summarized rather well and very briefly by the United States Department of Commerce in its recent publication. "In broad outline this period embraces the following sequence of events: the precipitous fall from the prosperity of 1929 into the deep depression of the early nineteen-thirties; the subsequent recovery, interrupted by the brief recession of 1938, but then continuing through the remaining prewar years; the tremendous performance of the economy in the prosecution of World War II; reconversion and the postwar boom, with attendant inflationary strains; the mild business recession of 1949; and the rapid recovery of 1950, merging in the latter half of that year into the period of hostilities in Korea" (page 1).

The tremendous growth of the United States economy is reflected in the fact that gross national product (the nation's output of goods and services in terms of its total market value) rose from 104 billion dollars in 1929 to 365 billion dollars in 1953—an increase of 250%. From the consumer's standpoint there have been great changes in the make-up of this gross national product: the frozen food industry was born and grew to near maturity, home appliances not only increased but completely changed character, and sulfonamide drugs and the antibiotics (which have greatly aided the medical profession) were developed and exploited fully only during and after World War II. The inflation associated with World War II and with the Korean conflict resulted in the level of prices in 1953 being more than two-thirds above that of 1929. When allowances are made for this factor, the physical volume of the nation's output, as measured by the gross national product in constant prices, rose 105% over the period. This increase amounts to 57% in real

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Regina Evans Holloman, research assistant, assisted in the preparation of the tables.

Because of space limitations table 5 and the appendix have been omitted and will appear in the Bureau's reprints.

output per capita. The growth results largely from the terrifically rapid rate of technological change and improvement that have made possible the gains in productivity per unit of measure. All domestic purchasing groups have shared in the increased volume of production. There has been a marked shift from private to government use of the nation's output; in 1929 government purchases of goods and services absorbed 8% of the gross national product, but in 1953 they took 23.5%.

Real product per man-hour was well over half again as large in 1953 as it was in 1929; this implies an average annual rate of increase somewhat greater than 2%. The product per physician-hour has increased; physicians are now treating more people and more successfully than they did in 1929. Apparently, the product per hospital-hour has increased. The average length of hospital stay has been significantly decreased, but there is often need of a platoon of personnel to participate in the treatment given to one person; e. g., the heart operation, the treatment of malignancies by radiation, the use of an artificial kidney, and many procedures unknown in 1929. Moreover, the tools or equipment used in hospitals are more numerous and diverse than they were 25 years ago, and some of them are quite expensive.

Changes have also occurred in the flow of national income (the aggregate earnings of labor and property that arise from current production). There was a marked rise in the contribution of manufacturing industries, a 3% rise in the contribution of the wholesale and retail trade industries, and a decline in the percentage contributed by the agricultural sector. Significantly, the percentage of total national income contributed by government rose from 6% in 1929 to 11.5 in 1953; these two percentages represent only the labor directly employed by government and government enterprises. Moreover, the increase was almost entirely in the federal government component. An item of outstanding importance in the employee's share of national income is that of wage and salary supplements; they were an inconsequential element in 1929, but in 1953 they were 3.5% of national income. This growth represents the rise and expansion of the various insurance programs and of private pension, health, and welfare funds. Unfortunately, much of the increase in the total of personal income (current income received by persons from all sources) has been absorbed by direct personal taxes. These taxes, which were 3% in 1929, increased to 12.5% of personal income in 1953. Taxes, in dollars, are now 14 times as large as they were in 1929, and this relative increase is entirely in the federal government component. After deducting these taxes, there remained a total disposable personal income in 1953 of 250 billion dollars as compared with 83 billion dollars in 1929; with consumer prices averaging 59% higher in 1953 than in 1929, this increase in real disposable income per capita amounts to only about 45%.

Another important change was in personal consumer expenditures (the market value of goods and services purchased by

TABLE 1.—*Selected Personal Consumer Expenditures in the United States, 1929-1953 (Millions of Dollars)*

Year (1)	Total Medical Care (2)	Physicians' Services (3)	Hospitals (4)	Drugs and Sundries (5)	Dentists' Services (6)	All Other Medical Care (7)	Alcoholic Beverages (8)	Recreation (9)	Tobacco (10)	Personal Care (11)	Jewelry (12)	Total Columns (3)-(12) (13)	Total Consumer Expenditures (14)
1929	$2,937	$ 959	$ 403	$ 604	$ 482	$ 489	.....	$4,331	$1,695	$1,116	$ 560	$10,639	$78,952
1930	2,835	924	404	568	463	476	.....	3,990	1,450	1,039	513	9,827	70,968
1931	2,549	819	395	517	408	410	.....	3,302	1,489	979	328	8,647	61,333
1932	2,127	661	386	449	312	319	.....	2,442	1,322	817	252	6,960	49,306
1933	1,983	617	363	427	276	300	$ 665	2,202	1,233	660	172	6,915	46,392
1934	2,164	678	369	468	295	354	2,000	2,441	1,367	760	198	8,930	51,894
1935-1939 (average)	**2,598**	**821**	**448**	**546**	**345**	**438**	**3,177**	**3,145**	**1,621**	**916**	**302**	**11,759**	**63,677**
1940	3,018	913	527	635	419	524	3,600	3,761	1,883	1,036	414	13,712	71,881
1941	3,298	957	555	725	459	602	4,185	4,239	2,108	1,102	562	15,554	81,875
1942	3,735	1,048	649	848	505	685	5,080	4,677	2,381	1,354	743	17,970	89,748
1943	4,189	1,092	752	1,014	539	792	5,840	4,961	2,677	1,616	968	20,251	100,541
1944	4,705	1,321	846	1,072	573	893	6,775	5,422	2,717	1,834	1,050	22,503	109,833
1945	5,042	1,370	925	1,138	620	989	7,485	6,139	2,972	1,982	1,243	24,863	121,699
1946	6,104	1,720	1,163	1,271	772	1,178	8,360	8,021	3,478	2,086	1,506	30,155	146,617
1947	6,817	2,020	1,397	1,313	784	1,303	8,620	9,352	3,809	2,253	1,463	32,374	164,973
1948	7,385	2,203	1,591	1,358	833	1,400	7,930	9,603	4,147	2,286	1,435	32,786	177,609
1949	7,702	2,312	1,730	1,350	857	1,453	7,730	9,801	4,252	2,259	1,360	33,104	180,598
1950	8,276	2,435	1,975	1,406	869	1,591	7,880	10,768	4,401	2,355	1,385	35,065	194,026
1951	8,780	2,528	2,167	1,516	888	1,681	8,200	10,961	4,701	2,488	1,477	36,607	208,342
1952	9,382	2,676	2,388	1,569	906	1,833	8,725	11,368	5,092	2,573	1,561	38,701	218,424
1953	10,001	2,815	2,602	1,615	943	2,026	8,865	11,892	5,310	2,641	1,560	40,269	230,080

Sources for tables 1-5: United States Department of Commerce, Office of Business Economics, National Income: A Supplement to the *Survey of Current Business*, 1954 edition; table 30, pp. 206-208, and personal correspondence with the Office of Business Economics. See also chart 1.

The methods of estimation, reviewed in the appendix, are designed to exclude governmental and business expenditures for each item of personal consumer expenditures. Brief descriptions of the items (not the type of expenditure), arranged by column numbers, are presented below.

Because of rounding, some totals in this and other tables are not the sums of the individual entries.

(2) Total Medical Care: The sum of columns (3)-(7).

(3) Physicians' Services: Aggregate personal consumer expenditures are derived by the Office of Business Economics by multiplying (a) the number of physicians in independent practice (full or part time), by (b) their average gross income received from individuals (90% of total) as determined from questionnaire surveys of the profession. (Net income is three-fifths of their gross income.) Most of the income surveys used were conducted by the National Income Division. The estimates of number of physicians were adjusted for changing number of professional practitioners in the armed forces after 1940.

(4) Hospitals: This component consists of payments by patients to proprietary hospitals, and of current expenditures (including some depreciation) of nonprofit hospitals in providing care of patients.

(5) Drugs and Sundries: Expenditures include items not purchased in hospitals. Estimates for base years were based on manufacturing census and export and import statistics for selected items. Adjustments were made for the group of products for transportation costs, trade margins, taxes, and trade inventory changes. For other years estimates were based on extrapolation by retail sales series. Items include biological products, botanical drugs, medicinal chemicals, and pharmaceutical preparations; druggist and medical rubber sundries; clinical thermometers, hypodermic syringes and needles; surgical dressings; arch supports and other foot appliances; adhesive plaster, elastic stockings, elastic braces, suspensories, and other elastic supports; other surgical and orthopedic supplies and appliances; personal safety devices not elsewhere classified; and sanitary napkins and tampons.

(6) Dentists' Services: Estimates were derived by multiplying (a) the number of dentists in independent practice (adjusted for changing numbers in the armed forces after 1940), by (b) their average gross income received from individuals, determined from questionnaire surveys of the dental profession.

(7) All Other Medical Care: Included are (a) ophthalmic products and orthopedic appliances—field glasses; terrestrial and celestial telescopes; ophthalmic frames, mountings and parts; sun glass frames; ophthalmic focus lenses; sun or glare glasses and sun goggles; other ophthalmic goods; electric hearing aids; hearing aid batteries; artificial limbs (prosthetic); trusses and othopedic appliances (braces). Estimates are adjusted for such things as transportation costs and trade margins; (b) medical care and hospitalization insurance—premiums less claims: accident and health insurance, mutual accident and sick benefit associations, and group hospitalization associations, administrative and medical expenses of group health associations, and students' fees for medical care; and (c) other professional services—services of osteopathic physicians, chiropractors, chiropodists and pediatrists, private duty trained nurses, and the miscellaneous curative and healing professions. These estimates are, in the main, based on multiplication of the number of persons in independent practice by average gross income as established in questionnaire surveys. For the years for which such direct information is unavailable, extrapolation is for the most part based on income of physicians, which is felt to be parallel.

(8) Alcoholic Beverages: Includes distilled spirits, wine and beer, packaged form and by the drink.

(9) Recreation: See footnote to table 5, column (10).

(10) Tobacco: Includes all tobacco products, adjusted for tax-free and imported products.

(11) Personal Care: See footnote to table 5, column (4).

(12) Jewelry: Includes purchases of jewelry and watches.

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individuals and nonprofit institutions); expressed as a percentage of the gross national product, they declined from 75.5% in 1929 to 63% in 1953. Nonetheless, the absolute volume of goods and services purchased for personal consumption was vastly increased, with a gain of over two-fifths in real consumption per capita. Gains in consumption per capita were, of course, commonplace prior to 1929. There have been marked shifts in consumption patterns that reflect, in part, differential movements of prices. They also reflect changes in the pattern of spending for commodities; i. e., the social compulsions that dictate at least one automobile per household, the greatly altered pattern of food buying. Just as disposable personal income excludes the amount paid out in personal taxes, personal consumer expenditures exclude all governmental expenditures; for example, personal consumer expenditures for medical care excludes governmental (and business) expenditures for medical care. In the last quarter century there has been little change in total personal medical care expenditures as a percentage of gross national product, of national income, or of personal income. As the following dollar aggregates and (rounded) percentages indicate, the total personal medical care expenditures as a percentage of disposable personal income have increased, however, by 0.5 of a percentage point, and as a percentage of personal consumer expenditures, by 0.7 of a percentage point; since 1930, the increases were only 0.2 and 0.3 points. (A table, showing these

	1929		1953	
	Millions (1)	Personal Medical Care Expenditures as % of Column (1) (2)	Millions (3)	Personal Medical Care Expenditures as % of Column (3) (4)
Gross national product	$104,436	2.8	$364,857	2.7
National income	87,814	3.3	305,002	3.3
Personal income	85,763	3.4	286,066	3.5
Disposable personal income	83,120	3.5	250,099	4.0
Personal consumer expenditures	78,952	3.7	230,080	4.4

and other relationships for all of the 25 years, appears in the appendix.) The growth of the United States economy and inflation have made the smallest of these five national economic aggregates in dollars for 1953 more than twice the size of the largest aggregate for 1929.

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National income and outgo aggregates, in turn, are only parts of the picture of a changing economy. They provide measures of the functioning of the economy, but not changes in what might be loosely termed the structure of the economy from the standpoint of those who own the material things. Students and teachers of economics usually recognize the basic shortcoming of the "income approach" to the study of economics, in this case, medical economics. This major shortcoming can be explained in a simple manner by an analogy. Could the United States Steel Corporation, the American Telephone and Telegraph Company, or any other large national organization run its affairs by depending solely upon an income and outgo summary of its business operations? Obviously the net results of a year or a quarter's operation must be incorporated into the statement of assets and liabilities before the managers and stockholders of the corporation can measure the operating results and plan for the future.

The limited balance sheet presented by the Department of Commerce as a summary of the operations of the American economy is interesting and helpful, but this limited approach is outside the scope of the present discussion. The point must be made and made quickly, however, that the increase in real disposable income per capita of about 45% during this quarter century is an incomplete and misleading measure of the economic progress attained. This particular measure must be examined against a broader background, against the changes in the balance sheet of the American economy during this quarter century. The (gross) federal debt has risen by leaps and bounds, from 18 billion dollars in 1929 to 289 billion in 1953, excluding the large contingent liability under guaranteed mortgages and other programs. (Including state and local government debt, the increase has been from 35 billion to 322 billion dollars.) The full impact of this increasing indebtedness cannot be eliminated from this running account of changes in the American economy by pushing aside the increase in the federal debt with the statement that "we owe it to ourselves," even if the stress is on the second instead of the last word. When a family head considers his wealth or net worth he deducts the amount of the mortgage on his home and on his business properties but he counts among his assets the amount of government bonds that he owns and makes no deduction for the amount of the government bonds that he and his children owe. Consequently the typical householder in 1953 thought he was a lot richer than he really was. This elusive influence of the public debt makes the American people collectively think they are at least 289 billion dollars richer than they really are. In measuring the economic growth of our national economy for this quarter century of time we must, if we wish to be realistic, recognize the rise in the public debt as one of the unfortunate characteristics of the period. It is not necessary to engage in a controversy with Keynesian economists or other inflationists to demonstrate the simple truth

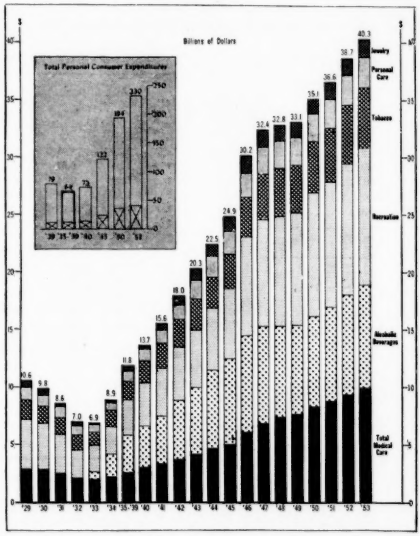

Chart I.—Selected personal consumer expenditures in the United States, 1929-1953. Source: *Survey of Current Business*, 1954 National Income Supplement.

that this 45% gain in disposable income per capita was attained during a quarter century when the illusion of great wealth was being created by a tremendous rise in the national debt. In other words, the accomplishment of this 45% gain would have been far greater if the public debt had not expanded.

Another liability of a somewhat similar nature that grew up in this quarter century was the deficit in the Old-Age and Survivors Insurance Trust Fund. The amount of the deficit depends upon the assumptions as to such factors as interest rates, mortality rates, and probability of remarriage. This implied obligation of the sovereign power to pay pensions to millions of gainfully employed persons while charging them cut-rate premiums has created a liability for succeeding generations that is almost as real as the liability created by the rising public debt. This additional liability of the government, which is not generally recognized as a liability by heads of families, was at least 200 billion dollars in 1953. It is another "deficit" item that must be considered in measuring the net gains in the nation's economy during the quarter century; at least, in the interpretation of these net gains. It must be added to the public debt; the people

collectively think they are almost 500 billion dollars richer than they really are. The complete picture cannot be presented by merely calling attention, as we have, to the increasing role of government, from 8% to 23.5%, in these annual national aggregates. These deficits, while creating an illusion of great wealth, have placed our economy on a treadmill. How to keep this treadmill from slowing down is obviously not one of the questions to be answered in this discussion.

Moreover, difficulties involved in combining private and public items affect the choice of a frame of reference for considering the economic position of medical care during the quarter century. Basically, this is a problem of economic perspective. Consider food, the largest item in personal consumer expenditures. So long as the discussion is restricted to personal consumer expenditures—what we spend as individuals, not what we spend as individuals and taxpayers—the food item seems reasonably clear. But an attempt to include public expenditures for food raises a number of interesting questions. Should the expenditures of the federal government for soil conservation and other forms of subsidy for farmers be added to the food item in estimating the public plus the private expenditures for food? The answer to such a question is very involved. Our purpose is merely to raise the question in order to pinpoint the pitfall of considering the need for medical care as the only human need, because the consideration of one human need can give rise to all manner of special pleading. People literally need everything, and focusing too much attention on one human need at a time is an unscientific procedure as well as one that can lead to many false conclusions.

If the purpose were merely to divide people into two categories, the well and the sick, it would be necessary to consider the sick people who were taken care of by government. In our study of the age and sex distribution of hospital patients (Bulletin 97) equal attention was given to patients in public and private hospitals. But for the purpose at hand this simple procedure would be highly misleading because we are discussing dollar expenditures; we are discussing national economic aggregates. Our larger frame of reference must be the wealth and income of the American people, as the task at hand is more economic than medical. This vital distinction is often overlooked.[1] The dilemma may be sharpened by considering a few items. Should the expenditures of the United States Department of Defense for the medical care of defense personnel be considered as a public expenditure for medical care? Should the expenditures of the Veterans Administration for the care of veterans with service-connected disabilities be considered a public expenditure for medical care? Doubtless most economists would consider both expenditures better classified if they were treated as defense expenditures for past, present, and future wars. The use of a frame of reference for defining the economic position of medical care that involves an allocation of these public expenditures to medical care items would merely call attention to the fact that we have had several wars recently. Should expenditures of employers for the medical care of injured workmen be considered as medical care expenditures or as among the costs of operating business enterprises? One of the virtues of using personal consumer expenditures as a frame of reference is that it excludes such items as the medical expenditures of the armed forces, of the Veterans Administration, and for injured workmen.

The choice of personal consumer expenditures as a frame of reference in this study should not be interpreted as an attempt to belittle the importance of physicians who serve in the local, state, and federal public health services. The decision to use this concept for medical care expenditures does, however, permit an appraisal of this quarter century unencumbered by a great many factors that would lead into a discussion of the inherent nature of government and its proper function in our society. This decision does not, and cannot, deny that during the quarter century covered the role of government has increased. But unless we could measure its increase—from 8% to 23.5%—in all areas of expenditures (for example, food), we would have no frame of reference for the treatment of these public expenditures for "medical care"; hence, this topic must be put aside as a separate project. Accordingly, we shall confine our attention to the private part of the economy.

Data on personal consumer expenditures will be presented for medical care, for all consumer expenditures, and for certain classifications of consumer expenditures other than medical care, in order to permit the reader to make comparisons among the various categories. The dollar amounts, and in some cases the percentages, represent slight variations from those previously published by this Bureau. This is because the Department of Commerce has constantly endeavored to improve the quality and scope of its estimates and because it has reworked many of the income and product series for the whole 25-year period in order to reflect additional data sources and improvements in estimating techniques. In some cases the revisions of the more detailed components have been rather substantial.

TABLE 2.—*Selected Personal Consumer Expenditures as Percentages of Total Personal Consumer Expenditures, 1929-1953*

Year (1)	Total Consumer Expenditures (2)	Total Medical Care (3)	Physicians' Services (4)	Hospitals (5)	Drugs and Sundries (6)	Dentists' Services (7)	All Other Medical Care (8)	Alcoholic Beverages (9)	Recreation (10)	Tobacco (11)	Personal Care (12)	Jewelry (13)	Total Columns (4)-(13) (14)
1929	100.0%	3.72%	1.21%	0.51%	0.76%	0.61%	0.02%	....	5.49%	2.15%	1.41%	0.71%	13.48%
1930	100.0	3.99	1.30	0.57	0.80	0.65	0.07	....	5.62	2.04	1.46	0.72	13.85
1931	100.0	4.16	1.34	0.64	0.84	0.67	0.07	....	5.38	2.43	1.60	0.53	14.10
1932	100.0	4.31	1.34	0.78	0.91	0.63	0.65	....	4.95	2.68	1.66	0.51	14.12
1933	100.0	4.27	1.33	0.78	0.92	0.59	0.65	1.43%	4.75	2.66	1.42	0.37	14.91
1934	100.0	4.17	1.31	0.71	0.90	0.57	0.68	3 85	4.70	2.63	1.46	0.38	17.21
1935-1939 (average)	**100.0**	**4.08**	**1.29**	**0.70**	**0.86**	**0.54**	**0.69**	**4.99**	**4.94**	**2.55**	**1.44**	**0.47**	**18.47**
1940	100.0	4.20	1.27	0.73	0.88	0.58	0.73	5.01	5.23	2.62	1.44	0.58	19.08
1941	100.0	4.03	1.17	0.68	0.89	0.56	0.74	5.11	5.18	2.57	1.42	0.69	19.00
1942	100.0	4.16	1.17	0.72	0.94	0.56	0.76	5.66	5.21	2.65	1.51	0.83	20.02
1943	100.0	4.17	1.09	0.75	1.01	0.54	0.79	5.81	4.93	2.66	1.61	0.96	20.14
1944	100.0	4.28	1.20	0.77	0.98	0.52	0.81	6.17	4.94	2.47	1.67	0.96	20.49
1945	100.0	4.14	1.13	0.76	0.94	0.51	0.81	6.15	5.04	2.44	1.63	1.02	20.43
1946	100.0	4.16	1.17	0.79	0.87	0.53	0.80	5.70	5.88	2.37	1.42	1.03	20.57
1947	100.0	4.13	1.22	0.85	0.80	0.48	0.79	5.23	5.67	2.35	1.37	0.89	19.62
1948	100.0	4.16	1.24	0.90	0.76	0.47	0.79	4.46	5.41	2.33	1.29	0.81	18.46
1949	100.0	4.26	1.28	0.96	0.75	0.47	0.80	4.28	5.43	2.35	1.25	0.75	18.33
1950	100.0	4.27	1.26	1.02	0.72	0.45	0.82	4.06	5.55	2.27	1.21	0.71	18.07
1951	100.0	4.21	1.21	1.04	0.73	0.43	0.81	3.94	5.36	2.26	1.19	0.71	17.57
1952	100.0	4.30	1.23	1.10	0.72	0.41	0.84	3.99	5.20	2.33	1.18	0.71	17.72
1953	100.0	4.35	1.22	1.13	0.70	0.41	0.88	3.85	5.17	2.31	1.15	0.68	17.50

Source: Table 1. See also chart II.

1. Davis, M. M.: Medical Care for Tomorrow, New York, Harper & Brothers, 1955.

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Personal Consumer Expenditures

Personal consumer expenditures are those dollars spent by individuals for the conduct of their personal lives. (The Department of Commerce now uses the term "personal consumption expenditures" in place of the former term "personal consumer expenditures"; the older term is used herein except in appendix table A.) As defined by the Department of Commerce these expenditures exclude taxes and capital goods. "Personal Consumption Expenditures consists of the market value of purchases of goods and services by individuals and nonprofit institutions and the value of food, clothing, housing, and financial services received by them as income in kind. It includes the rental value of owner-occupied houses but does not include purchases of dwellings, which are classified as capital goods" (page 59). Some comments on the Department of Commerce methods of estimating, and descriptions of the breakdowns and sources used in deriving the aggregate, Total Personal Consumer Expenditures, from which the data for tables 1 to 5 were derived, are presented in the appendix. Personal consumer expenditures amounted to 78,952 million dollars in 1929, they declined to 46,392 million dollars in 1933 (the low point of the depression), and they have increased by varying amounts each year since then. (See column (14) of table 1 and the shaded insert in chart I.) In 1953 total personal consumer expenditures amounted to 230,080 million dollars, 2.9 times the amount for 1929. Food, of course, was the largest item, increasing from 19,535 million dollars in 1929 to 71,844 million in 1953, from 24.7% of total personal consumer expenditures to 31.2% in 1953. The amount spent for medical care rose from 2,937 million to 10,001 million dollars.

An examination of table 1 and chart I will clearly indicate that the total dollar amounts spent for all consumer items, for medical care and each of its five components, and for the selected consumer items declined during the early 1930's and rose rapidly during the 1940's. Of the 1953 total, of the 10,001 million dollars for medical care, 2,815 million was for physicians' services, followed by 2,602 million for hospital services, 1,615 million for drugs and sundries, 943 million for dentists' services, and 2,026 million for all other medical care. The amount spent for physicians' services, although somewhat greater than the amount spent for hospital services, involves the treatment of several dozen times as many patients as were admitted to nongovernmental hospitals, for each one of whom the nonprofit hospital paid out an average of about $177. The need for a frame of reference other than total dollars is obvious. In addition to total personal consumer expenditures, this table and this chart present the amount spent for alcoholic beverages, tobacco, personal care, and jewelry. These items were selected because the amounts spent for them were comparable to the amount spent for medical care or one of the five components; furthermore, some of these items, like medical care, are purchased irregularly. There is no intention to imply that any one consumer expenditure item has an exact counterpart in the entire series of several hundred items. The presentation of the data for these selected items should enable many readers to gauge the relative size of medical care expenditures, even though the national aggregate of total personal consumer expenditures seems vast and therefore rather hazy. No moral judgment is

TABLE 3.—*Percentage Distribution of Personal Consumer Expenditures for Medical Care, 1929-1953*

Year (1)	Total Medical Care (2)	Physicians' Services (3)	Hospitals (4)	Drugs and Sundries (5)	Dentists' Services (6)	All Other Medical Care (7)
1929.....	100.0%	32.65%	13.72%	20.57%	16.41%	16.65%
1930.....	100.0	32.59	14.25	20.04	16.33	16.79
1931.....	100.0	32.13	15.50	20.28	16.01	16.08
1932.....	100.0	31.08	18.15	21.11	14.67	15.00
1933.....	100.0	31.11	18.31	21.53	13.92	15.13
1934.....	100.0	31.33	17.05	21.63	13.63	16.36
1935-1939	**100.0**	**31.60**	**17.24**	**21.02**	**13.28**	**16.86**
1940.....	100.0	30.25	17.46	21.04	13.88	17.36
1941.....	100.0	29.02	16.83	21.98	13.92	18.25
1942.....	100.0	28.06	17.38	22.70	13.52	18.34
1943.....	100.0	26.07	17.95	24.21	12.87	18.91
1944.....	100.0	28.08	17.98	22.78	12.18	18.98
1945.....	100.0	27.17	18.35	22.57	12.30	19.62
1946.....	100.0	28.18	19.05	20.82	12.65	19.30
1947.....	100.0	29.63	20.49	19.26	11.50	19.11
1948.....	100.0	29.83	21.54	18.39	11.28	18.96
1949.....	100.0	30.02	22.46	17.53	11.13	18.87
1950.....	100.0	29.42	23.86	16.99	10.50	19.22
1951.....	100.0	28.79	24.68	17.27	10.11	19.15
1952.....	100.0	28.52	25.56	16.72	9.66	19.54
1953.....	100.0	28.15	26.02	16.15	9.43	20.26

Source: Table 1. See also charts III, IIIA, and IV.

TABLE 3A.—*Three Items Composing "All Other Medical Care" Expenditures*

Year (1)	Ophthalmic Products and Orthopedic Appliances: Millions of Dollars (2)	Ophthalmic Products and Orthopedic Appliances: Percentage of Total Medical Care (3)	Other Professional Services: Millions of Dollars (4)	Other Professional Services: Percentage of Total Medical Care (5)	Medical Care and Hospitalization Insurance: Millions of Dollars (6)	Medical Care and Hospitalization Insurance: Percentage of Total Medical Care (7)
1929.....	$131	4.46%	$250	8.51%	$108	3.68%
1930.....	133	4.69	233	8.22	110	3.88
1931.....	117	4.59	201	7.89	92	3.61
1932.....	93	4.37	154	7.24	72	3.38
1933.....	92	4.64	138	6.96	70	3.53
1934.....	124	5.73	145	6.70	85	3.93
1935-1939	**153**	**5.89**	**163**	**6.27**	**122**	**4.70**
1940.....	186	6.16	173	5.73	165	5.47
1941.....	227	6.88	179	5.43	196	5.94
1942.....	258	6.91	196	5.25	231	6.18
1943.....	307	7.33	206	4.92	279	6.66
1944.....	333	7.08	245	5.21	315	6.70
1945.....	349	6.92	266	5.28	374	7.42
1946.....	396	6.49	338	5.54	444	7.27
1947.....	400	5.87	390	5.72	513	7.53
1948.....	427	5.78	423	5.73	550	7.45
1949.....	448	5.82	448	5.82	557	7.23
1950.....	479	5.79	476	5.75	636	7.68
1951.....	532	6.06	498	5.67	651	7.41
1952.....	561	5.98	532	5.67	740	7.89
1953.....	577	5.77	562	5.62	887	8.87

For brief descriptions of these three items see footnote to table 1, column (7).

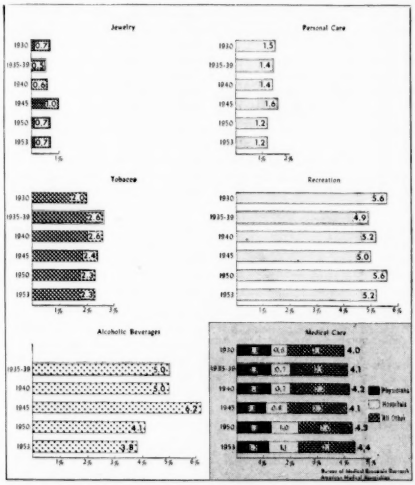

Chart II.—Selected personal consumer expenditures as percentages of total consumer expenditures, 1930-1953. Source: U. S. Department of Commerce.

implied in the choice of these selected items, for they are merely a record of how the people of the United States, enjoying the benefits of a free society, chose to spend their money.

Another group of items was selected—owner-occupied nonfarm dwellings; shoes; furniture; fuel (except gas) and ice; electricity, gas, and water; and user-operated transportation. Data for this second group of six selected items are presented in tables 1A (dollars), 2A (percentage of total personal consumer expenditures), and 4A (percentage of 1935-1939 average); no comments will be made on these data. Although this alternate set of selected items does not meet the test of similarity of amount as well as the first, some readers may prefer the second set; they should help to provide additional comparative perspectives for the medical care items. The dollar expenditures

TABLE 1A.—*Other Selected Personal Consumer Expenditures, 1929-1953 (Millions of Dollars)*

Year (1)	Owner-Occupied Nonfarm Dwellings (2)	Shoes (3)	Furniture (4)	Other Fuel and Ice (5)	Household Elec., Gas, and Water (6)	User-Operated Transportation (7)	Total Columns (2)-(7) (8)
1929.....	$3,868	$1,839	$1,918	$1,608	$1,436	$5,960	$18,629
1930.....	5,552	1,516	1,507	1,542	1,516	4,662	16,295
1931.....	5,101	1,321	1,293	1,318	1,526	3,747	14,306
1932.....	4,416	1,122	883	1,138	1,477	2,935	11,971
1933.....	3,844	985	853	1,152	1,409	3,035	11,278
1934.....	3,643	1,174	963	1,263	1,466	3,584	12,093
1935-1939..	**3,928**	**1,302**	**1,434**	**1,364**	**1,619**	**4,808**	**14,555**
1940.....	4,310	1,389	1,809	1,549	1,842	5,872	16,771
1941.....	4,706	1,588	2,233	1,674	1,908	7,031	19,140
1942.....	5,192	1,946	2,404	1,851	2,024	3,581	16,998
1943.....	5,588	2,095	2,572	1,995	2,084	2,859	17,193
1944.....	6,060	2,176	2,795	2,043	2,199	3,045	18,318
1945.....	6,492	2,473	3,104	2,189	2,318	3,992	20,568
1946.....	7,343	3,022	4,287	2,415	2,457	9,004	28,528
1947.....	8,471	3,182	4,687	2,879	2,732	12,316	34,267
1948.....	9,776	3,204	5,025	3,286	3,013	14,313	38,617
1949.....	10,962	3,133	4,842	2,835	3,289	16,939	42,000
1950.....	12,195	3,253	5,442	3,055	3,686	20,182	47,813
1951.....	13,430	3,485	5,594	3,089	4,120	19,586	49,304
1952.....	14,818	3,492	5,635	2,996	4,534	20,054	51,499
1953.....	16,194	3,566	5,755	2,873	4,957	23,461	56,806

Source: United States Department of Commerce.

Brief descriptions of the items (not the type of expenditure), arranged by column numbers, are presented below.

(2) Owner-Occupied Nonfarm Dwellings: Space-rental value, covering heating and plumbing facilities, water heaters, lighting fixtures, kitchen cabinets, linoleum, storm windows and doors, window screens, screen doors, and window blinds or shades. It excludes other furnishings, equipment and related services—furniture, stoves and ranges, refrigerators, repairs of furniture and appliances, fuel, electricity, etc.

(3) Shoes: Includes shoes and other footwear, shoe cleaning and repair.

(4) Furniture: Includes furniture; and semidurable house furnishings, consisting mainly of textile house furnishings (except those specified elsewhere), including piece goods allocated to house furnishings use, and lamp shades, brooms and brushes.

(5) Other Fuel and Ice: All fuel and ice except those included in column (6).

(6) Electricity, Gas, and Water: A division of Household Utilities on basis of classification as service utilities.

(7) User-Operated Transportation: Includes new cars and net purchases of used cars, tires, tubes, accessories, and parts; automobile repair, greasing, washing, parking, storage and rental, gasoline and oil; bridge, tunnel, ferry and road tolls; and automobile insurance premiums less claims paid.

for the medical care items and the first group of selected items are shown as percentages of total consumer expenditures in table 2 and, for selected years, in chart II. Except for 1929 and 1930 the total spent for medical care was slightly above 4.0% of total personal consumer expenditures; for 1930, 3.99% and for 1929, only 3.72%. A careful search was made to try to determine the reasons for the unusually low percentage for 1929, but no satisfactory explanation could be found. We doubt that the lack of reported personal consumer expenditures for alcoholic beverages in 1929 was responsible for this abnormally low percentage for medical care expenditures, or for other percentages. Some students of national aggregates have suggested that the 1929 data should not be criticized too much because it was the first year in the Department of Commerce series. Nor can the low percentage be attributed entirely to the prosperity of 1929, because the percentages in later prosperous years have been above 4.0. Perhaps the most plausible explanation is the relatively small amount spent for hospital services in that boom year.

In general, it can be stated that the percentage spent for tobacco has been slightly less than twice that spent on physicians' services, which, in turn, has been slightly less than the percentage spent for personal care but somewhat greater than the percentage spent for jewelry. The percentage spent on recreation has been consistently greater than the percentage spent for all

TABLE 2A.—*Other Selected Personal Consumer Expenditures as Percentages of Total Personal Consumer Expenditures, 1929-1953*

Year (1)	Owner-Occupied Nonfarm Dwellings (2)	Shoes (3)	Furniture (4)	Other Fuel and Ice (5)	Elec., Gas, and Water (6)	User-Operated Transportation (7)	Total Columns (2)-(7) (8)
1929.....	7.43%	2.33%	2.43%	2.04%	1.82%	7.55%	23.60%
1930.....	7.82	2.14	2.12	2.17	2.14	6.57	22.96
1931.....	8.32	2.15	2.11	2.15	2.49	6.11	23.33
1932.....	8.96	2.28	1.79	2.31	3.00	5.95	24.28
1933.....	8.29	2.12	1.84	2.48	3.04	6.54	24.31
1934.....	7.02	2.26	1.86	2.43	2.82	6.91	23.30
1935-1939....	**6.17**	**2.04**	**2.25**	**2.14**	**2.54**	**7.55**	**22.69**
1940.....	6.00	1.93	2.52	2.16	2.56	8.17	23.33
1941.....	5.75	1.94	2.73	2.04	2.33	8.59	23.38
1942.....	5.79	2.17	2.68	2.06	2.26	3.99	18.94
1943.....	5.56	2.08	2.56	1.98	2.07	2.84	17.10
1944.....	5.52	1.98	2.54	1.86	2.00	2.77	16.68
1945.....	5.33	2.03	2.55	1.80	1.90	3.28	16.90
1946.....	5.01	2.06	2.92	1.65	1.68	6.14	19.46
1947.....	5.13	1.93	2.84	1.75	1.66	7.47	20.77
1948.....	5.50	1.80	2.83	1.85	1.70	8.06	21.74
1949.....	6.07	1.73	2.68	1.57	1.82	9.38	23.26
1950.....	6.29	1.68	2.80	1.57	1.90	10.40	24.64
1951.....	6.45	1.67	2.68	1.48	1.98	9.40	23.66
1952.....	6.78	1.60	2.58	1.36	2.08	9.18	23.58
1953.....	7.04	1.55	2.50	1.25	2.15	10.20	24.69

Source: Table 1A.

TABLE 4A.—*Other Selected Personal Consumer Expenditures, 1929-1953, as Percentages of the 1935-1939 Average*

Year (1)	Owner-Occupied Nonfarm Dwellings (2)	Shoes (3)	Furniture (4)	Other Fuel and Ice (5)	Elec., Gas, and Water (6)	User-Operated Transportation (7)	Total Columns (2)-(7) (8)
1929.....	149.39	141.24	133.75	117.89	88.70	123.96	128.88
1930.....	141.34	116.44	105.09	113.05	93.64	96.96	112.73
1931.....	129.86	101.46	90.17	96.63	94.26	77.93	98.97
1932.....	112.42	86.18	61.58	83.43	91.23	61.04	82.82
1933.....	97.86	75.65	59.48	84.46	87.03	63.12	78.02
1934.....	92.74	90.17	67.15	92.60	90.55	74.54	83.66
1935-1939....	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1940.....	109.72	106.68	126.15	113.56	113.77	122.13	116.02
1941.....	119.81	121.97	155.72	122.73	117.85	146.24	132.41
1942.....	132.18	149.46	167.64	135.70	125.02	74.48	117.59
1943.....	142.26	160.91	179.36	146.26	128.72	59.46	118.94
1944.....	154.28	167.13	194.91	149.78	135.82	63.33	126.72
1945.....	165.27	189.94	216.46	160.48	143.17	83.03	142.29
1946.....	186.94	232.10	298.95	177.05	151.76	187.27	197.36
1947.....	215.66	244.39	326.85	211.07	168.75	256.16	237.06
1948.....	248.88	246.08	350.42	240.91	186.10	297.69	267.15
1949.....	279.07	240.63	337.66	207.84	203.15	352.31	290.56
1950.....	310.46	249.85	379.50	223.97	227.67	419.76	330.77
1951.....	341.90	267.67	390.10	226.47	254.48	407.36	341.09
1952.....	377.24	268.20	392.96	217.45	280.05	417.10	356.27
1953.....	412.27	273.89	401.32	210.63	306.18	487.96	392.99

Source: Table 1A.

forms of medical care, which, in turn, was less than the percentage spent on alcoholic beverages from 1935 to 1949, and higher since.

BOOM IN OBSTETRICS AND PEDIATRICS

Perhaps the largest factor in the increase in dollars (from 5,042 million to 10,001 million) and in the percentage (from 4.14 to 4.35) spent for medical care since the end of World War II in 1945 is the increase in the number of births. They

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rose from 2,700,000 in 1945 to 3,900,000 in 1953, and the birth rate rose from 19.5 to 24.7. The proportion of all births in (registered) hospitals also increased, from 72% to 85%. Ideally, medical care expenditures should be divided into those for disease, for accidents, and for childbearing; such a division would show surprisingly large amounts for accidents and childbearing. It is the increase in the latter—an increase of 1,200,000 "bundles of joy"—that has been primarily responsible for increasing the percentage spent for medical care from 4.14 in 1945 to 4.35 in 1953. In pointing out the role of childbearing in this eight-year rise in the percentage spent for medical care, our purpose is not to quarrel with the classifications of the Department of Commerce but to warn against the misuse of the over-all data on medical care expenditures. The medical costs of childbearing are properly considered in the category of medical costs, but interpreting this increase in the percentage of consumer expenditures made for medical care since the end of World War II as a proof of high medical care prices or as an indication that our nation is becoming less healthy would be entirely unfounded.

It would be difficult to choose a completely satisfactory set of assumptions for the purpose of measuring the precise amount of this postwar increase attributable to the increase in the number of births or to the birth rate after allowing for some gain in population for reasons other than births. It would also be necessary to employ assumptions suitable to the early part of this quarter century when the birth rate and the number of births were decreasing. We have made certain assumptions that allow for a smaller increase in births and, consequently, a smaller increase in obstetric fees, in preparing some exploratory computations. They indicate that the percentage spent for medical care in 1953 would have been reduced from 4.35 to 4.2, possibly to 4.1. The computations are too preliminary to warrant presentation herein. Certainly, the increase in births has probably been the greatest single factor in the moderate but steady rise in the percentage spent for medical care during the last eight or ten years of this quarter century. Moreover, physicians have contributed to the high birth rate; reduction of the maternal mortality rate to a very low level has practically eliminated the mortal fear of childbearing.

The enormous baby boom since World War II has had a secondary effect on personal consumer expenditures for medical care. A number of studies have been made on the age and sex incidence of the demand for the services of physicians and hospitals. A compilation of these studies has been made by Collins and co-workers.[2] On the whole, these studies show that the frequency of use of health services was higher for the preschool age group than for other age groups. Hence the great increase in the number of young children since World War II has probably produced a disproportionate increase in the per capita demand for the services of physicians and hospitals. During their adult years the survivors of this large group of children will greatly expand the potential labor force and should tend to increase all the national economic aggregates. But the time elapsed since the baby boom started after World War II has been insufficient for them to increase national income. So the secondary effect of the great increase in births—in the field of pediatrics rather than obstetrics—may actually be greater than the primary effect of the costs of childbearing. Furthermore, although pregnancy is not a disease, accidents, disease, and the prevention of disease account for the medical and hospital services for small children. Apparently, the number of annual births will exceed 4 million for several years to come, and the number of preschool children shows no signs of diminishing.

DISEASE, ACCIDENTS, AND BABIES

Unfortunately for our present purposes, the methods used by the Department of Commerce in preparing the annual estimates of personal consumer expenditures for the services of physicians and hospitals do not permit a separation of either the costs of childbearing or the costs of frequent medical care for young children. Without such breakdowns it is not possible to utilize a standardized age distribution in estimating the separate amounts of medical care costs resulting from these two factors. Pending the development of the necessary breakdowns, we conclude this portion of the analysis with the admonition that a very considerable portion of the increase in the dollars spent by consumers for medical care, especially for the services of physicians and hospitals, during the post-World War II years should be attributed to childbearing and the great increase in both the number and proportion of young children in our population. This admonition should be interpreted as a recognition that medical care expenditures have risen, both absolutely and relatively; but the rise does not indicate a deterioration in the health of the American people or, as will be shown in more detail later, rapidly rising prices in all fields and aspects of medical care.

The full implication of personal consumer expenditures for medical care could be presented with clarity and significance if these expenditures could be divided into three parts: those for diseases, those for accidents, and those for childbearing. Furthermore, adjustments for changes in the age distribution of the population in any of these three types of expenditures would increase the significance of the data. Increases and decreases in each of these three items would clarify the role of medical care expenditures in the whole gamut of personal consumer expenditures. At the present time this threefold division cannot be made.

PEAKS AND TRENDS

Prior to 1945, in this quarter century two peaks in personal consumer expenditures for medical care should be noted. The highpoint of 4.28% in 1944 undoubtedly reflects the rationing of many commodities and services, the scarcity of certain drugs, and the induction of about two-fifths of the physicians into military service—an abnormal year from any standpoint. The first peak of 4.31% in 1932 probably reflects the stability of some medical expenditures in the depth of a great depression. The percentage spent for physicians' services (column (4), table 2) has fluctuated from a low of 1.09 in 1943 to 1.34 in 1931 and 1932. On the other hand, the percentage spent for hospital services has shown a rather steady and sharp upward trend to a highpoint of 1.13 in 1953. Expenditures for the services of dentists have varied between 0.41% in 1952 and 1953 and 0.67% in 1931, with a noticeable downward trend during the quarter century. The percentage spent for drugs and sundries (outside of hospitals) has followed an erratic course, rising to a World War II peak and then declining; for all other medical care, the percentage rose rather steadily from 0.62 in 1929 to 0.88 in 1953.

Since the American people were free to spend more on medical care and less on some other item, for example, recreation, their reasons for not doing so are important. Even a cursory examination of the types of expenditures included under medical care by the Department of Commerce will indicate that some medical care expenditures are necessities and some are luxuries within the ordinary meaning of those terms. A private hospital room with all the extras is, for some patients, a common example of the latter. A reasonably satisfactory explanation of why the people did not choose to spend more for medical care and less for recreation would carry us too far into the realm of marginal utility and value. People tend to spend their money so that the marginal utility of each dollar spent is equal to the marginal utility enjoyed by any other dollar spent. At the outer fringe of medical care there are a great many types of expenditures that many would consider to be almost frivolous; in fact, many people would prefer a pleasure trip to such small additions to their well-being as can be made by the purchase of some of these relatively unimportant medical care items. In the end it is largely a matter of degree. The freedom of the people to distribute their personal consumer expenditures as they see fit tends to keep these marginal utilities equated.

THE MEDICAL CARE DOLLAR

The changes in the percentages spent for each of the five medical care items can be presented more clearly by changing the frame of reference from total personal consumer expenditures to those for medical care only. The total amount spent for

2. Collins, S. D., and others: Sickness Experience in Selected Areas of the United States, Public Health Monograph no. 25, Public Health Service Publication no. 390, U. S. Department of Health, Education, and Welfare, 1955.

medical care has been set equal to 100% in tables 3 and 3A, and in charts III, IIIA, and IV. We have called this smaller frame of reference the medical care dollar. The portion of the medical care dollar spent for physicians' services has declined from 32.65 cents in 1929 to 28.15 cents in 1953; this decline is evident in the top line on chart III and in the black portion

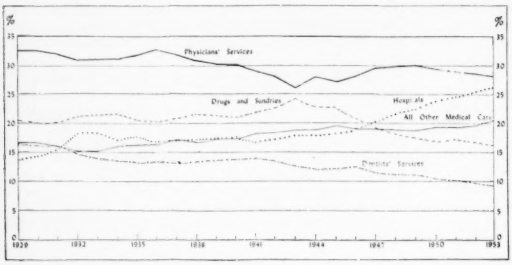

Chart III.—Percentage distribution of expenditures for medical care, 1929-1953. Source: U. S. Department of Commerce.

of the medical care dollar in chart IV—from 33 cents in 1929 to 28 cents in 1953. It is presented in more concise statistical form in chart IIIA as a trend line with a definite downward slope during this quarter century; the straight line trends were removed from chart III for the sake of clarity. There was also a definite downward trend in the portion of the medical care dollar spent for the services of dentists, from 16.41 cents in

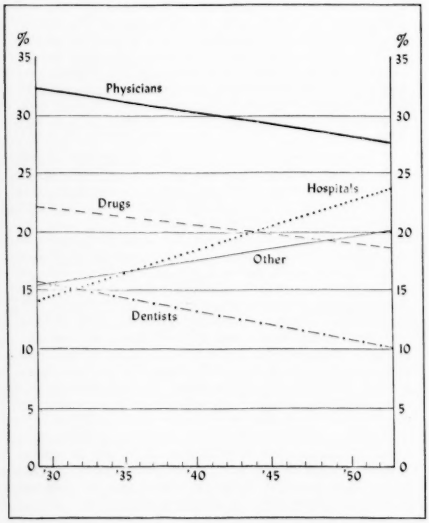

Chart IIIA.—Trends in portions of the medical care dollar. Source: U. S. Department of Commerce.

1929 to 9.43 cents in 1953. This downward trend is roughly indicated on chart III and definitely by the downward trend of the straight line on chart IIIA and the smaller wedge of the pie in chart IV—from 16 cents to 10 cents. The pie chart also gives a quick visual presentation of the decline in the portions of the medical care dollar spent for the services of physicians and dentists combined, from 49 cents in 1929 to 38 cents in 1953. This decline in the percentage of the medical care dollar that American consumers spent for the professional services of physicians and dentists is one of the outstanding changes in the economics of medical care in this quarter century. (The average relationship between the percentages of the medical care dollar for each of the five items may be described by fitting straight lines [y=a+bx] for the 25-year period to the values plotted on chart III by the method of least squares. The results are five derived "trend lines" shown on chart IIIA. The formulas used in plotting these trend lines were: physicians, y=32.44-0.19x; hospitals, y=13.76+0.40x; for others, y=15.43+0.19x; drugs, y=22.35-0.15x; and dentists, p=16.03-0.24.)

The portion of the medical care dollar spent for hospital services rose sharply from 13.72% in 1929 to 26.02% in 1953. This rise in the hospital portion of the medical care dollar can be seen by following the line for hospitals in chart III, but it is much clearer in the sharp upward slope of the straight line in chart IIIA and in the widening wedge of the pie of chart IV—from 14 to 17 to 26 cents. Although we have elsewhere raised some questions regarding the Department of Commerce estimates of total and the breakdowns of personal consumer expenditures for medical care, this obvious upward trend in expenditures for hospital services is not surprising. It was during this quarter century that the American people began to patronize their hospitals frequently, beginning of course with birth itself and continuing throughout life. The number of patient days in nongovernment hospitals rose from 77 million in 1929 to 123 million in 1953 (compiled from the annual hospital numbers of THE JOURNAL of the American Medical Association). Unquestionably the rapid expansion of hospital insurance has played an important role, but our point here is merely that the phenomenal health progress attained during this quarter century would probably have been impossible if the portion of the medical care dollar going to hospitals had not increased sharply. Change is inherent in a dynamic economy, and the increase in the economic importance of hospitals is another of the outstanding changes in the economics of medical care during the quarter century.

Chart IIIA seems to forecast a larger share of the medical care dollar for hospital services than for physicians' services.

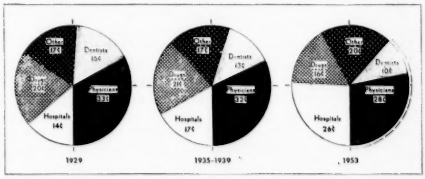

Chart IV.—The medical care dollar. Source: *Survey of Current Business*, 1954 National Income Supplement.

A simple extrapolation of these two trend lines indicates that they will intersect by 1960. (Preliminary data for 1954 suggest it may happen before 1960.) We do not make that as a positive forecast because trend lines are, of course, statistical measures of the past and not too reliable as a forecasting device. Nevertheless, there is a strong possibility that the American consumer will be spending more for the services of hospitals than for the services of physicians sometime in the 1960's. The portion spent for drugs and sundries (outside of hospitals) was 20.57% in 1929, 24.21% in 1943, and only 16.15% in 1953. This peak in 1943, shown in chart III, was probably a result of the wartime scarcity of some drugs; the development of antibiotics, which were originally very expensive; and possibly the tendency of hard-pressed civilian physicians to prescribe more drugs than usual during the war days when two-fifths of the physicians were in the armed services. Moreover, this category includes not only consumer expenditures for prescriptions but also the amounts spent by consumers for patent medicines and for such

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things as clinical thermometers, rubber sundries, arch supports, and some articles of personal hygiene; the amount spent for prescriptions alone is not available. We hesitate to make an extrapolation of the trend for this item because of the extremely rapid progress in the development of new drugs.

We have incorporated into all other medical care, which rose rather steadily from 16.65% in 1929 to 20.26% in 1953, the Department of Commerce's separate estimates for the three remaining items—ophthalmic products and orthopedic appliances, other professional services, and medical care and hospitalization insurance (premiums less claims). These are shown separately in table 3A. The portion spent for ophthalmic products and orthopedic appliances rose from 4.46% in 1929 to 7.33% in 1943 and decreased to 5.77% in 1953. The portion spent for other professional services—which the Department of Commerce previously divided into six categories: osteopathic physicians, chiropractors, chiropodists, pediatrists, private-duty trained nurses, practical nurses and midwives, and miscellaneous curative and healing professions—declined rather steadily from 8.51% to 5.62%; the decision of the Department of Commerce to give only one amount for these six items precludes any comment on any one of them.

medical care—489 million dollars in 1929 to 2,026 million dollars in 1953 [column (7), table 1]. The increase in this overhead item also accounted for one-ninth of the 7,064 million dollar increase in total personal consumer expenditures for medical care between 1929 and 1953; this increase was also 42% of the increase between 1929 and 1953 in the amount spent for physicians' services, 34% of the increase for hospitals, 77% of the increase for drugs and sundries, and 169% of the increase for dentists' services. It is not, however, a medical care item per se. The rise has been quite steady throughout the quarter century. (Preliminary data for 1954 indicate another jump in this overhead item.)

The inclusion of this item in medical care expenditures—with which we have no quarrel—means that the overhead cost of operating voluntary health insurance plans is allocated by the Department of Commerce to medical care expenditures as would be an obstetrician's fee, a week's stay in a nongovernment hospital, or the price of a bottle of penicillin purchased outside of the hospital. Obviously the function of insurance is to spread risks, not losses. If all people were to be covered by all the necessary forms of health insurance, the overhead cost of operating these insurance companies and plans would be an added

TABLE 4.—*Selected Personal Consumer Expenditures as Percentages of the 1935-1939 Average*

Year (1)	Total Medical Care (2)	Physicians' Services (3)	Hospitals (4)	Drugs and Sundries (5)	Dentists' Services (6)	All Other Medical Care (7)	Alcoholic Beverages (8)	Recreation (9)	Tobacco (10)	Personal Care (11)	Jewelry (12)	Total Columns (3)-(12) (13)	Total Consumer Expenditures (14)
1929	118	117	90	111	140	112	...	138	105	122	185	90	124
1930	109	113	90	104	134	109	...	127	89	113	170	84	111
1931	98	100	88	95	118	94	...	105	92	107	109	74	96
1932	82	81	86	82	90	73	...	78	82	89	83	59	77
1933	76	75	81	78	80	68	21	70	76	72	57	59	73
1934	83	83	82	86	86	81	63	78	84	83	66	76	81
1935-1939	100	100	100	100	100	100	100	100	100	100	100	100	100
1940	116	111	118	116	121	120	113	120	116	113	137	117	113
1941	127	117	124	133	133	137	132	135	130	127	186	132	129
1942	144	128	145	155	146	156	160	149	147	148	246	153	141
1943	161	133	168	186	156	181	184	158	165	176	321	172	158
1944	181	161	189	196	166	204	213	172	168	200	348	191	172
1945	194	167	206	208	180	226	236	195	183	216	412	211	191
1946	235	210	269	233	224	269	263	274	215	228	499	256	230
1947	262	246	312	240	227	297	271	297	239	246	484	275	259
1948	284	268	355	249	241	320	250	305	256	250	475	279	279
1949	296	282	386	247	248	332	243	312	262	247	450	282	284
1950	319	297	441	258	252	363	248	342	271	257	459	298	305
1951	338	308	484	278	257	384	258	349	290	272	489	311	327
1952	361	326	535	287	263	418	275	361	314	281	517	329	343
1953	385	343	581	296	273	463	279	378	328	288	517	342	361

Source: Table 1

INSURANCE OVERHEAD

Special attention must be given to the last two columns in table 3A, medical care and hospitalization insurance. In former years this item was divided into: (1) net payments to group hospitalization and health associations, (2) student fees for medical care, (3) net payments of accident and health insurance, and (4) net payments of mutual accident and sickness benefit associations. The former terms and the present single term, medical care and hospitalization insurance, are somewhat misleading to many students of insurance. The amounts are really premiums less claims except for student fees for medical care and medical expenses of group health associations; the term overhead or operating expense of the insurance carrier would be more descriptive, even though some of these dollars (on a cash basis) went into reserves. The actual benefits to policyholders are, and should be, excluded, for they enter the picture of medical care expenditures through other doors. The amount of this insurance overhead item increased from 108 million dollars in 1929 to 887 million in 1953, or from 3.68% of medical care expenditures to 8.87%; in 1945 the amount was only 374 million dollars. Thus, the increase in medical care and hospitalization insurance overhead accounted for 779 million dollars of the 1,537 million dollar increase in the item all other

cost of medical care over and above the indemnities paid. This cardinal point should be stressed over and over again. Sometimes it seems that, when a labor union is trying to induce an employer to pay an extra few cents an hour for health insurance, the purchase of aspirin tablets is made to appear as a dire hardship for the worker. Payment of these small claims increases the overhead cost of operating an insurance plan; it increases the total cost of medical care to the American people. Provisions for the payment of these "five and dime claims" under insurance arrangements add to the total cost of medical care to the American people and, thereby, raise serious doubts about the wisdom of such provisions. The fact that such employer costs are passed on to the ultimate consumer decreases the interest of some people in such matters but cannot decrease the extra dead weight added to the expenditures of the American people for insurance overhead for medical care. Most of the increase from 108 million to 887 million dollars probably resulted from the rapid expansion of voluntary health insurance in the United States rather than from the cost of handling so many small claims. Coverage of almost 100 million people with some form of hospitalization insurance in 1953 was truly worth a considerable overhead charge. The unavailability of separate data on the cost of handling these small claims results from the

failure of the voluntary insurance plans and companies to make such data available. Whatever the division may be, our point here is merely that the overhead cost of operating voluntary health insurance plans is a part, and a rapidly increasing part, of the amount classified as personal consumer expenditures for medical care. But this is not an argument for governmental compulsion, in the hope that, despite the greater overhead, it could be spread more thinly over all taxpayers. This insurance overhead item of 887 million dollars could, at least theoretically, have been distributed among the four major categories of medical care. The major portion would, of course, have been assigned to hospitals, because of the extremely large volume of hospital insurance, and little or none to dentists' services. It is to be hoped that the Department of Commerce will soon be able to develop the necessary breakdowns of this insurance overhead item in order that the allocations can be shown regularly. The importance of this suggestion for future years rests on the assumption that this item will continue to show the most rapid growth of the four major and three minor items; in 1953 this amount for insurance overhead was 94% of the amount spent for dentists' services, 55% of the amount spent for drugs and sundries, 34% of the amount spent for hospital service, and 32% of the amount spent for physicians' services.

The changes in the amounts spent by consumers for the five medical care items and the five selected consumer items shown in tables 1 and 2 are also revealed in the index numbers presented in table 4. The base period used is 1935-1939, and the average amount for these five years for each item is set equal to 100. This method of presentation avoids the use of dollars; the magnitude of the index for any year is relative to the five-year base period average. The index number for the year for total personal consumer expenditures [column (14)] provides a standard of comparison for the index number for any one of the items; the decline from 124 in 1929 to 73 in 1933, past the 200 mark in 1946 (230) and the 300 mark in 1950 (305). For 1953 the index number was 361; that is, total personal consumer expenditures in 1953 were 261% above the 1935-1939 level. On the other hand, the 1953 index for total medical care was 385, for physicians' services 343, for hospitals 581, for drugs and sundries 296, for dentists' services 273, and for all other medical care 463. For the first set of five selected items for 1953 the indexes were: 279 for alcoholic beverages, 378 for recreation, 328 for tobacco, 288 for personal care, and 517 for jewelry. An interesting coincidence is that the index number for these 10 items combined—5 medical care and 5 selected—was 342 for 1953 and for physicians' services 343.

The Department of Commerce presents 67 numbered items and 23 subitems in its table 30, Personal Consumption Expenditures, by Type of Product, 1929-1953 (pp. 206-209). These are grouped into 12 classes shown in our table 5. (As noted, table 5 is omitted here but will appear in the reprints.) The items included in each class are defined in extensive footnotes. They are presented in table 5 in millions of dollars (part A), as index numbers based on 1935-1939 (part B), and as percentages of total personal consumer expenditures (part C). The largest class of expenditures is food and tobacco. [The amounts for tobacco are shown separately in columns (10) and (11) of our tables 1 and 2.] Although dwarfed by food and tobacco, the other large items were: household operation; housing; clothing, accessories, and jewelry; and transportation. The data in column (7) of table 5, medical care and death expenses, exceed the amounts shown in other tables for medical care alone by the amounts for death expenses, which rose from 607 million dollars in 1929 to 1,168 million in 1953. Our exclusion of death expenses from this broad category should not imply any criticism of the Department of Commerce in combining death expenses and medical care as one of the 12 broad groups of personal consumer expenditures; death expenses seem to fit better there than in any of the other 11 major categories. Table 5 provides, therefore, a broad perspective of how American consumers chose to spend their money in each of these 25 years. Economically, they were free to spend their money in a different fashion. This table, then, is the record of the collective choices of the American people during the quarter century.

(Concluded next week)

LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

Army and Navy: Induction Under "Doctor-Draft" Law.—The petitioner, a licensed physician, filed suit for a writ of habeas corpus to obtain a discharge from the U. S. Army. After a denial of the writ by the trial court and the court of appeals, the petitioner was granted certiorari to the United States Supreme Court.

The petitioner was over the age limit set for general induction, but he was subject to conscription under a special provision of the draft law providing for induction of men of certain medical and allied specialist categories. He had received his professional training during World War II at government expense, but he had spent less than 90 days in active service. He was, therefore, one of the first to be called for service under the medical specialist provision of the draft law. After his induction the petitioner was refused an officer's commission, because he refused to answer certain loyalty questions (referring to membership in the Communist Party or Communist-front organizations), claiming his federal constitutional privilege. He was, however, assigned duties as a medical laboratory technician. Three issues were presented: 1. Must the Army grant the petitioner a commission? 2. Must the Army assign only those duties to the petitioner that are consistent with his position as a medical specialist? 3. May the petitioner obtain a military discharge if the Army refuses to assign him to such duties?

The Supreme Court held that it was the function of the President of the United States to commission officers in the Army, but that under the law the President was not required to grant the petitioner a commission, even though doctors inducted under this special provision are customarily given commissions. The Court's holding was based on a 1950 act, wherein Congress provided that the Army Medical Corps shall consist of officers "and such other members of the Army as may be assigned thereto by the Secretary of the Army. . . ." The Court also held that the petitioner, having been specially inducted as a doctor, was entitled to be assigned duties falling within "medical and allied specialist categories." To hold otherwise, said the Court, would be to permit an unlawful discrimination. Finally the Court found that the petitioner had been assigned medical duties. The petitioner claimed that even though he was assigned such duties, he was not permitted to do all the things that a man of his experience was entitled to do. The Court said that the courts should not entertain suits to determine whether or not a particular serviceman was being assigned tasks suited to his particular capabilities, since such decisions were solely within the discretion of the military officials.

Accordingly, the Supreme Court affirmed the judgment for the Army and denied the petitioner a discharge. *Orloff v. Willoughby, 73 S. Ct. 534 (U. S., 1953).*

Drunkenness: Privilege Against Self-Incrimination; Consent.—The defendant was tried and convicted of the offense of driving while intoxicated. From such conviction the defendant appealed to the court of criminal appeals of Texas.

After an automobile accident in which the defendant was involved, the defendant was taken to a hospital for treatment. While there a laboratory technician told the defendant that he intended to take a specimen of the defendant's blood. The defendant offered his arm in the proper position, and the sample was taken without any objection by the defendant. At the trial a toxicologist testified that the blood sample contained 2.2 mg. of alcohol per cubic centimeter of blood and that such percentage (0.22%) was indicative of intoxication. The defendant objected to this testimony on the ground that it violated his constitutional prohibition against self-incrimination.

The court held that where a blood specimen is taken with the consent of the defendant no constitutional prohibition against self-incrimination is violated by the subsequent use of the specimen in evidence against the accused. Accordingly, the conviction of the defendant was affirmed. *Marshall v. State, 262 S. W. (2d) 491 (Texas, 1953).*

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MEDICAL NEWS

CALIFORNIA

County Society Honors Dr. Murray.—The Napa County Medical Society recently paid tribute to Dr. Dwight H. Murray, President-Elect of the American Medical Association, at a testimonial dinner attended by more than 100 physicians from Napa County and elsewhere. The August issue of the society's bulletin carries a picture of Dr. Murray on the cover, an editorial tribute, and two pages of photographs taken at the dinner.

Council on Sports Medicine.—An organizational meeting of a group tentatively named the Western Council of Sports Medicine was scheduled for Aug. 22 in the Los Angeles County Medical Association Auditorium, with Dr. Wilmer B. Buckland of Van Nuys and Dr. William D. Lindgren, medical director of the Sister Kenny Polio Hospital, El Monte, as co-chairmen. The new organization of physicians and others will undertake research and analysis of sports programs and of the treatment of athletic injuries, training methods, and standards of physical fitness, and a study of physical education programs in general. Membership will be open to members of the Los Angeles County Medical Association and to certain qualified laymen whose profession or hobby brings them into close association with athletics.

CONNECTICUT

Society News.—Newly elected officers of the Connecticut Public Health Association include Dr. William Hart Upson, Suffield, president; Dr. Edward M. Cohart, New Haven, president-elect; Leonard F. Menczer, D.D.S., Hartford, vice-president; Mrs. Claire Heinhardt, West Hartford, secretary; and Mrs. Eloise K. Erkler, treasurer (reelected).

Annual Clinical Congress.—The 30th Clinical Congress, sponsored by the Connecticut State Medical Society and Yale University School of Medicine, will convene at the Yale-New Haven Medical Center, New Haven, Sept. 14-15. The following program will be presented Wednesday at 10 a. m. in the Brady Auditorium:

Clinical Aspects of Disorders of Coagulation, Mario Stefanini, Brighton, Mass.
Anticoagulants, William T. Foley, New York, and Henry I. Russek, Staten Island, N. Y.
Hypophysectomy for Breast Cancer, Bronson S. Ray, New York.
Chemotherapy of Neoplastic Disease: Its Relationship to Surgery, Joseph H. Burchenal, New York.
Changing Concepts of Cancer Surgery, J. Englebert Dunphy, Boston.

Simultaneously, in the Fitkin Amphitheater, Dr. David Hurwitz, Cambridge, Mass., will discuss "Use of Various Types of Insulin," after which Dr. Max Miller, Cleveland, will consider "Use of Fructose in Treatment of Diabetic Acidosis." Luncheon, 12:30 p. m., will be preceded by a clinicopathological conference conducted by Dr. Benjamin Castleman, Boston, and followed by panels on low back pain and on headache. The Thursday session in the Brady Auditorium will be devoted to panels on infectious hepatitis, immunization against poliomyelitis, drug therapy in hypertension, and new tranquilizing drugs. The following program will be presented in the Fitkin Amphitheater:

Intractable Heart Failure: Its Management, E. Hugh Luckey, New York.
Management of Patients with Arterial Disease, Fiorindo A. Simeone, Cleveland.
Clinicopathological Conference, H. Edward MacMahon, Boston.
Indications for Emergency Surgery in Biliary Tract Disease, Henry Doubilet, New York.

Registration, admitting one to all sessions, will be $3. Medical students, interns, and residents will be guests of the congress, if properly certified. Address inquiries to the Connecticut State Medical Society, 160 St. Ronan St., New Haven 11.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

ILLINOIS

New State Birth Record.—According to the state department of public health more babies were born in Illinois in 1954 than in any previous year of record. Last year's estimated total of 217,000 live births exceeds by about 10,000 the previous high established in 1953. The increase in births in 1954 and the low death rate combined to give the state a natural increase in population of close to 125,000. Deaths among babies under one year of age totaled an estimated 5,400 in 1954, or 25 per 1,000 live births. These figures compare with a total of 5,326 infant deaths in 1953 and a rate of 25.8. Neonatal mortality, however, among babies under 28 days of age continued at about the same rate as in 1953—about 18 deaths per 1,000 live births. Despite the record number of births, maternal mortality continued to decline in Illinois in 1954.

Chicago

Michael Reese Research Foundation.—An open house will mark the official opening of the new $1,250,000 building of the Michael Reese Foundation Sept. 11, 1-4 p. m. The building, which will be dedicated in honor of the late Dr. Sidney O. Levinson, first executive director of the foundation, is a two-story, reinforced concrete structure, occupying the southern half of the block between Ellis and Lake Park avenues, north of

Michael Reese Research Foundation

31st Street. The northern half will be used as a park adjacent to the Friend Convalescent Home, to be constructed by Michael Reese Hospital in 1956. The first floor of the building contains facilities for blood donors, a blood bank, and laboratories for preparation of plasma and serums required for community service. The second floor is devoted to research laboratories and offices. Dr. Albert M. Wolf is executive director of the foundation.

IOWA

General Practice Meeting.—The annual meeting of the Iowa Academy of General Practice will be held at the Hotel Savery, Des Moines, Sept. 15-16. Presentations by out-of-state speakers will include "Recognition of Neurotic and Psychotic Patients in Medical Practice" and "The Suicide" by Dr. Louis G. Moench, Salt Lake City, and "Emotional Tragedies in Infancy and Childhood" and "Teen-Age Problems" by Dr. John G. Young, Dallas, Texas.

KANSAS

Fluorination of Water Supply.—Coldwater, the 24th Kansas city to fluorinate its public water supply, is the first city in the state to cooperate with a private utility company to give the citizens fluorination. The city purchased equipment and supplies, and the Western Light and Telephone Company, which owns the water system, handles operation, maintenance, and testing.

Society News.—The Kansas Radiological Society recently elected Dr. Abraham M. Cherner, Hays, president; Dr. Kenneth Allen, Kansas City, vice-president; and Dr. George S. Ripley Jr., Salina, secretary-treasurer.——At a meeting of the Kansas State Pediatric Society in Emporia, Sept. 10, Dr. James M. Baty, Boston, will present "Psychosomatic Problems," "Emergencies

in the Newborn," and "Colic." Dr. Herbert A. Wenner of the University of Kansas Medical Center, Kansas City, will discuss "Current Research in Poliomyelitis." Physicians who are members of the Kansas Medical Society are eligible to attend.

KENTUCKY

Needs of Handicapped.—The governor has appropriated $10,000 from his emergency fund for a survey by the state's Legislative Research Commission to determine the needs of the handicapped in Kentucky. In addition to Dr. J. Gant Gaither, Hopkinsville, president-elect of the Kentucky State Medical Association, other physicians on the committee are J. Murray Kinsman and Asa Barnes, Louisville, and Marshal M. Jones and Franklin B. Moosnick, Lexington.

Auxiliary Mental Health Activities.—The mental health committee of the woman's auxiliary to the Jefferson County Medical Society, set up in January, 1954, to investigate local needs and possible avenues of volunteer service in an effort to correct and check the increase of mental illness, reports a successful project in improving the morale and pleasant living of 180 attendants working with patients at the Kentucky General State Hospital at Lakeland. Through the efforts of the auxiliary, numerous social events were planned, which resulted in "boosting the morale of attendants . . . and hence contributing toward the service to mentally ill patients."

LOUISIANA

Faculty Promotions.—The following promotions of physician faculty members have been announced by the Tulane University of Louisiana School of Medicine, New Orleans.

Professors: Jack K. Wickstrom (orthopedics) and Donovan C. Browne (clinical medicine).

Associate Professors: James W. Burks Jr. and Lee D. McLean (clinical medicine); Jason H. Collins and John C. Weed (clinical obstetrics and gynecology); and Homer D. Kirgis (anatomy and clinical surgery).

Assistant Professors: Daniel W. Beacham and Frank G. Nix (clinical obstetrics and gynecology); Robert Birchall, Edward R. Christian, Stanley Cohen, Allan M. Goldman, Richard H. Linn, Arthur R. Payzant, Thomas E. Weiss, and Norton W. Voorhies (clinical medicine); Murl E. Faulk Jr. (neurology and surgery); Patrick H. Hanley and Charles R. Walters (clinical surgery); William D. Love (medicine); and Samuel M. Peacock Jr. (neurology).

MASSACHUSETTS

Institute of Psychiatric Treatment.—An Institute of Psychiatric Treatment will be held in the reception building of the Boston State Hospital Sept. 29 to Oct. 1. Dr. Leo Alexander and Dr. Robert Arnot will open the institute at 9 a. m. Thursday with "Combined Psychologic-Physiologic Treatment of Mental Disorder—Neurophysiologic Foundation," which will be followed by clinical demonstrations by Dr. Leo Alexander and Dr. Irving E. Gilbert, Boston. Group discussion at lunch will be concerned with "Experiences in Treating Schizophrenia." The afternoon session will be devoted to a symposium and group discussion on new drugs, including Thorazine and Serpasil. The Friday program will include a clinical demonstration on electronarcosis by Dr. Esther Bogen Tietz, Los Angeles; a group luncheon discussion of experiences in treating anxiety; a symposium on patient management and rehabilitation; and dinner, 7 p. m., at the Harvard Club. The Saturday session will include a clinical demonstration on electric coma by Dr. Brian C. Campden-Main, Petersburg, Va., and a symposium and group discussion on psychotherapy, in which that subject will be discussed by Dr. Hans Lowenbach, Durham, N. C., and "Analytic Psychotherapy of the Psychoses" by Dr. John N. Rosen, New York. Registration fee is $35. Correspondence may be addressed to Dr. Alexander, 433 Marlborough St., Boston.

MICHIGAN

Hospital News.—The Bon Secours Hospital presented its eighth annual clinic day program June 7 at Grosse Pointe. Dr. Dwight J. Dutcher, Grosse Pointe Farms, moderated the morning session and Dr. Joseph B. Woolfenden, Detroit, the afternoon session. For the evening program, Dr. Donald N. Sweeny Jr., Detroit, general chairman of the program, served as moderator.

State Society Wins Award.—For its program in recruiting and training medical associates to extend the best medical care to the greatest number of Michigan citizens, the Michigan State Medical Society has received the Grand Award for State Associations in the annual contest for outstanding activities sponsored by the American Trade Association Executives. A bronze plaque was presented at the 35th anniversary meeting of the association in Mackinac Island to Dr. William Bromme, Detroit, chairman of the council of the Michigan society. The society inaugurated the medical associates' recruitment and training program shortly after World War II, when it became apparent that there was great need for laboratory technicians, medical secretaries, nurses, and other specialists. Since that time, thousands of Michigan young people have been attracted to enter careers in many fields of medicine and health as a result of the MSMS campaign, educational facilities have been set up at a number of Michigan universities and junior colleges, and doctors have been encouraged to make greater use of medical associates in the interest of serving the maximum number of people.

MISSOURI

Dr. Moore Resigns as Dean.—Washington University, St. Louis, announces that Dr. Carl V. Moore, St. Louis, dean of Washington University School of Medicine for the past two years, has resigned and has been appointed Busch Professor of Medicine and head of the department of internal medicine. Dr. Moore, who succeeds Dr. W. Barry Wood Jr. in both posts, also will become physician-in-chief to Barnes Hospital. His appointments were effective Sept. 1, but he will continue as dean until a successor is named.

NEW YORK

Emergency Medical Institutes.—The state Office of Medical Defense has announced that its 1955 fall series of training institutes will inaugurate a program to train personnel to work in civil defense-improvised hospitals after an enemy attack. A short evening meeting providing an orientation to the use of the state mobile hospital outfit as the equipment unit of an improvised emergency hospital, set up in schools or other preselected buildings, will be open to physicians and hospital personnel. The mobile hospital outfit, which is being stock-piled throughout the state, will be used to equip 200-bed improvised emergency hospitals. The outfit contains sufficient equipment and supplies to keep the hospital in operation 10 days. Institutes will be held in 14 locations and will run from Sept. 15 through Nov. 15. All interested physicians are invited to attend one or all of the sessions. The following schedule has been announced for western New York:

Oct. 19, Buffalo, University of Buffalo, Capen Hall, 3435 Main St.
Oct. 25, Rochester, Rochester Academy of Medicine, 1441 East Ave.
Oct. 27, Corning, Corning Glass Center.
Nov. 2, Niagara Falls, Niagara Falls City Hall, Main Street.
Nov. 4, Jamestown, New York State Armory, Porter Avenue.

New York City

University News.—A psychology major emphasizing clinical psychopathology will be offered this fall by Barnard College and the Payne-Whitney Psychiatric Clinic of the New York Hospital-Cornell Medical Center. The course is designed to improve the students' understanding of work in psychiatric hospitals through clinical course work and experience on the floors at the Payne-Whitney Clinic. The program has been developed by Dr. Oskar Diethelm, psychiatrist-in-chief of the New York Hospital, and Richard P. Youtz, Ph.D., executive officer of the Barnard psychology department.

Dr. Philips in New Post.—Frederick S. Philips, Ph.D., head of the department of pharmacology, division of experimental chemotherapy, Sloan-Kettering Institute for Cancer Research, will become research consultant for the American Cancer Society on Sept. 6. In his new post, Dr. Philips will be concerned with research directed toward finding chemotherapeutic agents effective against cancer in man. Before joining the Sloan-Kettering Institute in 1946, Dr. Philips was associated with the University of Rochester (N. Y.); Yale University, New Haven, Conn.; Massachusetts Institute of Technology, Cambridge; and the

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Medical Research Laboratory at Edgewood Arsenal, Md. While on the staff at Sloan-Kettering Institute, he served as assistant professor in the department of pharmacology, Cornell University Medical College.

OHIO

General Practitioners Meet in Dayton.—The fifth Annual Scientific Assembly of the Ohio Academy of General Practice will be held at the Dayton-Biltmore Hotel Sept. 20-21. Presentations by out-of-state speakers will include:

Management of Poliomyelitis, George J. Boines, Wilmington, Del.
Treatment of Acne, Alice E. Palmer, Detroit.
The Diarrheal Syndrome, Jerome Weiss, New York.
Use and Abuse of Hormones, John J. Bailey, Chicago.

OKLAHOMA

Chicago Position Accepted by John Hart.—John K. Hart, formerly associate executive secretary of the Oklahoma State Medical Association, has accepted a position in Chicago as executive secretary of the American Academy of Orthopaedic Surgeons. Mr. Hart had been with the state association for seven years. Mr. Don Blair has been appointed to succeed Mr. Hart.

Personal.—Dr. Kenneth W. Navin, Shawnee, city-county health director, was recently named "Knight of the Year" by the Shawnee Knights of Columbus.——Dr. Orange W. Starr, a past-president of the Creek County Medical Society, was honored at a picnic June 19 in Whitlock Park, in celebration of the 40th anniversary of his practice in Drumright. All "Starr brand" babies and their parents were invited as guests. A "This Is Your Life" sketch was presented, with state representative Lou S. Allard acting as master of ceremonies. A "stomp" dance was given by Indians from the Sac and Fox agency.——Dr. William E. Seba, Leedey, was recently given the honor of being the first to cross the new million dollar Camargo bridge. Dr. Seba is said to have crossed the South Canadian river near the bridge site more times than any other resident of the area, using practically every method of transportation, including fording the stream with horse and buggy.——Drs. J. R. Hinshaw, Oklahoma City, and Felix M. Adams, Vinita, were recently inducted into the Oklahoma Hall of Fame at a dinner in Oklahoma City. Dr. Hinshaw, who served with the Army at the headquarters of the Persian Gulf command during World War II, has been a staff physician at the University of Oklahoma Health Service since 1947. Dr. Adams has been medical superintendent at Eastern State Hospital, Vinita, since it opened in 1913.

PENNSYLVANIA

Pathologists Meet in Pittsburgh.—The middle eastern region of the College of American Pathologists, the Pennsylvania Association of Clinical Pathologists, and the Clinical Pathological Society of Pittsburgh will hold a joint meeting at the Roosevelt Hotel, Pittsburgh, Sept. 16-17. The Friday morning session will be devoted to a panel discussion on perinatal pathology and the afternoon program to a slide seminar, "Hazards of Therapy." Dr. A. Reynolds Crane, Philadelphia, will serve as moderator and Dr. Frank J. Dixon, Pittsburgh, as referee. (Slide sets will be sent to registrants two weeks before the meeting. Apply to Dr. Frank E. Sherman, Children's Hospital, Pittsburgh 13. Registration fee for slide seminar, $6.) The Clinical Pathological Society of Pittsburgh will be host at the social hour, 6 p. m., preceding the banquet. The Saturday morning program includes presentation of "Neuroblastoma in Childhood" by Dr. Robert C. Horn Jr., Henry Ford Hospital, Detroit, and a panel discussion, "A Proposed Blood Exchange Program."

Philadelphia

Frank Wister Thomas Professorship.—The University of Pennsylvania School of Medicine announces the establishment of the Frank Wister Thomas Professorship of Medicine, named for the late Dr. Thomas, an honor graduate in the school of medicine (class of 1880), who died in 1928 after having practiced medicine in Philadelphia for nearly 50 years. Dr. Francis C. Wood, chairman of the department of medicine, will be the first to hold the new professorship. Funds for the establishment of the chair were provided in the will of Dr. Thomas' widow, who also specified that "the head or chief professor of medicine at the Medical School" should occupy the chair. Dr. Wood has been associated with the medical faculty at Pennsylvania since 1928. During World War II he served in India for two years as chief of medical service in the 20th General Hospital Unit, which was organized at the University of Pennsylvania. He is a director of the Philadelphia County Medical Society.

SOUTH CAROLINA

Society News.—A joint meeting of the North Carolina Eye, Ear, Nose, and Throat Society and the South Carolina Society of Ophthalmology and Otolaryngology will be held at the Columbia Hotel in Columbia, Sept. 12-14. Guest speakers on ophthalmology will be Drs. Edward W. D. Norton and Frank D. Carroll, New York, and Dr. William B. Clark, New Orleans.

Piedmont Seminar.—The annual meeting of the Piedmont Post-[graduate] Seminar will be held at Clemson House Sept. 14-15. [Out]-state speakers will include Drs. John R. McCain and Edgar F. Fincher, Emory University, Ga.; Drs. Albert Vander Kloot, Anton M. Pantone, and Roger A. Harvey, Chicago; Dr. George D. Page, Charlotte, N. C.; and Dr. Bertram E. Sprofkin, Nashville, Tenn. Dr. Vander Kloot will discuss "Congestive Heart Failure" at the banquet Wednesday, and Dr. Harvey will deliver the Rose E. Romer Lecture at the Thursday banquet.

WASHINGTON

State Medical Meeting in Seattle.—The 66th annual session of the Washington State Medical Society will convene in Seattle Sept. 11-14 under the presidency of Dr. M. Shelby Jared, Seattle. Dr. Jared's presidential address Tuesday, 11 a. m., will be followed by a discussion of "Medicine, Legislation, and the Law" by C. Joseph Stetler, LL.M., Chicago, Director, A. M. A. Law Department. The annual banquet and dance (dress optional) will be held Tuesday. The public relations luncheon Wednesday noon will be addressed by Governor Arthur B. Langlie and by Dr. Elmer Hess, Erie, Pa., President of the American Medical Association, whose subject will be "How to Live Your Ethics." The president's reception will be held at 6:30 p. m. Dr. George N. Aagaard, Seattle, dean of the University of Washington School of Medicine, will address the house of delegates on medical school problems. Dr. William B. Bean, head, department of medicine, State University of Iowa College of Medicine, Iowa City, is scheduled to open the scientific sessions on Tuesday with "Recent Setbacks in Medicine" and to begin the Wednesday sessions with "Clinical Significance of Vascular Changes in the Skin and Mucous Membranes." Dr. Walter C. MacKenzie, department of surgery, University of Alberta Faculty of Medicine, Edmonton, Alberta, Canada, will open the Tuesday afternoon session with "Why Do Inguinal Hernias Recur?" and the Wednesday afternoon program with "Stop—Don't Operate!" There will be a no-host family dinner on Sunday at 6:30 p. m. Monday has been reserved for a salmon fishing derby (4:30 a. m., Ray's Boat House), the annual golf tournament (8:30 a. m., Seattle Golf Club), and the Sportsmen's Banquet (6:30 p. m., Seattle Golf Club). The woman's auxiliary, meeting simultaneously, will hold its annual luncheon Tuesday at 12:30 p. m. Addresses will be delivered by the national president, Mrs. Mason G. Lawson, Little Rock, Ark., and by Dr. Hess.

HAWAII

Report on Public Health.—According to the department of health, 1954 was the first year in which no deaths from tetanus occurred in the territory of Hawaii. The annual report indicates that 41 years have passed without a case of smallpox; 9 years without a death from diphtheria (only one case was reported for 1954); and 8 years without a death from typhoid fever (5 consecutive years without a single case). The tuberculosis rate of 9.3 showed a slight rise over the record low of 8.9 in 1953. Twenty new cases of leprosy (Hansen's disease) were confirmed, but only 10 patients needed isolation and the other 10 were granted outpatient status. Only seven maternal deaths occurred during the year. Of the 16,191 live births, the infant mortality rate was 22.4 per 1,000. Almost half the infant deaths were due to prematurity. Both maternal and infant death rates were lower than the national average.

GENERAL

Medical Examiner Staff Needed in Florida.—By recent act of the Florida State Legislature, a medical examiner's system has been established in Dade County effective Oct. 1. Funds have been provided for (1) employment of a full-time medical examiner, two part-time pathologists as assistant medical examiners, a toxicologist, secretaries, and other necessary personnel and (2) construction and equipment of a morgue and laboratories. Applicants for the position of chief medical examiner should address: Dr. Charles C. Hillman, Jackson Memorial Hospital, Miami, Fla.

Research Fellowship in Israel.—Applications are invited for the award of the Max and Rebecca Schrire Medical Research Fellowship (about $1,112) to a postgraduate student for research in medicine, with particular stress on ophthalmology, to be carried out at the Hebrew University in Jerusalem. Applications, containing biographical data, a brief outline of the proposed research project, and details on previous work, if any, should be forwarded to the Office of the Dean, The Hebrew University-Hadassah Medical School, P. O. B. 1255, Jerusalem, Israel, not later than Oct. 1, 1955.

Laurentian Hormone Conference.—The Laurentian Hormone Conference of the American Association for the Advancement of Science will hold its annual meeting at the Hotel Stanley, Estes Park, Colo., Sept. 11-16. The 14 presentations will include:

Biosynthesis and Metabolism of Thyroid Hormone, J. Roche, College de France, Paris, France.

Biosynthesis of the Sterols and Steroid Hormones, with Particular Reference to the Estrogens, R. D. H. Heard, McGill University School of Medicine, Montreal, Canada.

Male Sex Hormone and Its Role in Reproduction, Thaddeus Mann, University of Cambridge, England.

Uniform Sales Swindle.—Physicians are warned that one Herschel L. Rhodus is apparently operating a "confidence game" involving the sale of professional uniforms. Representing himself as a salesman for garment manufacturers, Rhodus allegedly collects cash deposits and payments for orders on uniforms that are not forwarded to the manufacturers. Rhodus is described as about 40 years old; height, 6 feet; weight, 185 pounds; sandy hair; frequently using the nickname "Doc." Formerly of Philadelphia, he is believed to be currently operating in Connecticut. Word has been received that warrants for his arrest are held by the police departments of Belleville, Ill., and Summit, N. J., to whom information concerning him should be sent.

Workshop in Medical Writing.—The American Medical Writers' Association will offer a workshop in medical writing Oct. 1, from 8 a. m. to 12 noon, during the annual meeting at the Hotel Jefferson, St. Louis. Dr. Richard M. Hewitt, Rochester, Minn., will serve as coordinator. The following presentations will be made:

From First Draft to Printed Article, Paul L. Fisher, Ph.D., School of Journalism, University of Missouri.

Specific Devices for Increasing the Readership of Medical Articles, Stewart Harral, M.A., School of Journalism, University of Oklahoma.

Writing Magazine Articles for the Lay Reader, Theodore B. Peterson, Ph.D., School of Journalism and Communications, University of Illinois.

There is no charge to members of the A. M. W. A.; for others the fee is $5. Those who intend to enroll are invited, well in advance of the meeting, to send manuscripts of popular medical articles to Theodore Peterson, Assistant Professor, School of Journalism and Communications, University of Illinois, Urbana. He will criticize some of these manuscripts at the workshop.

Meeting on Pharmacology.—The American Society for Pharmacology and Experimental Therapeutics will hold a meeting and a symposium on the teaching of pharmacology at the State University of Iowa, Iowa City, Sept. 4-8. Monday will be devoted to the symposium, "The General Principles of Excitability of Cardiac Tissue and Their Pharmacological Control," with Dr. Gordon K. Moe, Syracuse, N. Y., as moderator. In the evening Dr. Douglas S. Riggs, Buffalo, will moderate a symposium on graduate teaching in pharmacology. A panel discussion, "Chemical Bonding and the Molecular Level of Drug Interaction," Tuesday, 2-4 p. m. and 8-10 p. m., will have as moderator Fred W. Schueler, Ph.D., Iowa City. In all, 150 papers will be presented.

Prevalence of Poliomyelitis.—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States and its territories and possessions in the weeks ended as indicated:

Area	Aug. 13, 1955: Paralytic Type	Aug. 13, 1955: Total Cases Reported	Aug. 14, 1954, Total
New England States			
Maine	5	18	6
New Hampshire	..	24	7
Vermont	Not available	Not available	2
Massachusetts	206	411	39
Rhode Island	1	16	1
Connecticut	12	50	17
Middle Atlantic States			
New York	40	117	87
New Jersey	..	39	39
Pennsylvania	..	43	57
East North Central States			
Ohio	18	94	108
Indiana	10	27	48
Illinois	33	75	96
Michigan	26	92	118
Wisconsin	35	135	37
West North Central States			
Minnesota	13	73	52
Iowa	5	61	78
Missouri	6	16	49
North Dakota	..	4	6
South Dakota	..	1	4
Nebraska	8	16	23
Kansas	7	12	45
South Atlantic States			
Delaware	3	3	4
Maryland	15	18	8
District of Columbia	1	1	4
Virginia	4	23	39
West Virginia	4	11	22
North Carolina	5	26	69
South Carolina	8	23	22
Georgia	2	10	56
Florida	2	12	63
East South Central States			
Kentucky	11	43	33
Tennessee	..	8	43
Alabama	5	11	17
Mississippi	4	9	40
West South Central States			
Arkansas	9	16	16
Louisiana	6	12	18
Oklahoma	2	5	37
Texas	33	79	160
Mountain States			
Montana	3	6	4
Idaho	6	9	3
Wyoming	Not available	Not available	24
Colorado	4	8	26
New Mexico	3	10	12
Arizona	..	2	15
Utah	..	6	2
Nevada	..	..	13
Pacific States			
Washington	4	14	26
Oregon	10	12	12
California	29	70	197
Territories and Possessions			
Alaska	1	2	24
Hawaii	5	8	5
Puerto Rico	2	2	..
Total	606	1,793	1,933

Meeting of Obstetricians and Gynecologists.—The American Association of Obstetricians and Gynecologists will hold its 66th annual meeting at the Homestead, Hot Springs, Va., Sept. 8-10, under the presidency of Dr. Thaddeus L. Montgomery, Philadelphia. Presentations by invitation will include:

Analysis of 6,891 Hysterectomies for Benign Pelvic Disease (with Special Reference to the Safety of Routine Total Abdominal Hysterectomy), C. Gordon Johnson, New Orleans.

Experience with the Use of Radioactive Colloidal Gold in Treatment of Ovarian Carcinoma, William C. Keettel, Iowa City.

Complications of Pregnancy and Nutritional Status (Toxemias of Pregnancy), Harold C. Mack, Detroit.

Cesarean Section in Cincinnati, Ohio, 1950 Through 1954, Richard D. Bryant, Cincinnati.

Statistical Study of 12 Possible Factors Governing Postpartum Bleeding, Raymond A. Schwegler, Lawrence, Kan.

Thursday at 8:45 p. m. Dr. J. Chassar Moir of Oxford, England, will deliver the Joseph Price Oration. The presidential address is scheduled for Friday noon, and the banquet will be addressed at 7:30 that evening by the Hon. George C. Corson, Plymouth Meeting, Pa. The annual meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons Foundation, Inc., will be held at the Homestead at 2:30 p. m. Thursday.

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CANADA

Meeting on General Practice.—The Ontario chapter, College of General Practice of Canada, will present a symposium on medical practice at the Royal York Hotel, Toronto, Sept. 22. The morning session, moderated by Dr. Sandford English, Fort Erie, Ontario, will include "Pitfalls in Diagnosis" by Dr. Ray F. Farquharson, Toronto; "Lesions of the Prostate" by Dr. Harry R. Newman, New Haven, Conn.; and "Advances in Cardiovascular Surgery" by Dr. Eric M. Nanson, Saskatoon. Dr. Peter A. Kinsey, Toronto, will serve as moderator for the following afternoon program: "Renal Disease in Children," Dr. Weston M. Kelsey, Winston-Salem, N. C.; "The Significance of Bleeding Late in Pregnancy," Dr. Kenneth T. MacFarlane, Montreal; and "Office Procedures in Proctology," Dr. Louis A. Buie, Rochester, Minn. Questions and panel discussion will follow both sessions. Wives of physicians are invited to attend the luncheon, 12:15 p. m. (Dr. Max Alexandroff, St. Catharines, Ontario, chairman), and reception, 5:30-6:30 p. m. The symposium will be cosponsored by Lederle Laboratories Division of North American Cyanamid Limited.

DEATHS IN OTHER COUNTRIES

Dr. Thomas Jeeves (Lord) Horder, physician to Queen Elizabeth II, died at his home in Petersfield, England, Aug. 13, after a heart attack. Dr. Horder had served as president of the Harveian Society of London, the Fellowship of Medicine, the Medical Society of London, the Eugenics Society, and the British Association of Physical Medicine and had been chairman of the British Empire Cancer Campaign, the Empire Rheumatism Council, and the Noise Abatement League.

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MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

1956 Clinical Meeting, Seattle, Nov. 27-30.

1957 Annual Meeting, New York, June 3-7.

NATIONAL CONFERENCE ON PHYSICIANS AND SCHOOLS, Moraine-on-the-Lake Hotel, Highland Park, Ill., Oct. 12-14. Dr. W. W. Bauer, 535 N. Dearborn St., Chicago, Director.

ACADEMY OF PSYCHOSOMATIC MEDICINE, Hotel Plaza, New York, Oct. 6-8. Dr. Ethan Allan Brown, 75 Bay State Road, Boston 15, Secretary.

AMERICAN ACADEMY FOR CEREBRAL PALSY, Claridge Hotel, Memphis, Tenn., Oct. 10-12. Dr. Robert A. Knight, 869 Madison Ave., Memphis 3, Tenn., Secretary.

AMERICAN ACADEMY OF NEUROLOGICAL SURGERY, The Homestead, Hot Springs, Va., Oct. 27-29. Dr. Eben Alexander Jr., Bowman Gray School of Medicine, Winston-Salem, N. C., Secretary.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, Palmer House, Chicago, Oct. 9-14. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 3-6. Dr. E. H. Christopherson, 610 Church St., Evanston, Ill., Executive Secretary.

AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, LaSalle Hotel, Chicago, Oct. 3-7. Miss Doris Gleason, 510 N. Dearborn St., Chicago 10, Executive Director.

AMERICAN ASSOCIATION OF NURSING HOMES, Hotel Muehlebach, Kansas City, Mo., Sept. 19-21. Mr. Ira O. Wallace, P.O. Box 366, New Castle, Ky., Secretary.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS, The Homestead, Hot Springs, Va., Sept. 8-10. Dr. Frank R. Lock, Bowman Gray School of Medicine, Winston-Salem, N. C., Secretary.

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, Drake Hotel, Chicago, Oct. 27-29. Dr. James K. Stack, 700 N. Michigan Blvd., Chicago 11, Secretary.

AMERICAN COLLEGE OF GASTROENTEROLOGY, Edgewater Beach Hotel, Chicago, Oct. 24-26. Dr. Joseph Shaiken, 33 West 60th St., New York 23, Secretary.

AMERICAN COLLEGE OF HOSPITAL ADMINISTRATORS, Convention Hall, Atlantic City, N. J., Sept. 17-19. Mr. Dean Conley, 620 North Michigan Ave., Chicago 11, Executive Director.

AMERICAN DENTAL ASSOCIATION, San Francisco, Oct. 17-20. Dr. Harold Hillenbrand, 222 East Superior St., Chicago 11, General Secretary.

AMERICAN FRACTURE ASSOCIATION, Hotel Fontainebleau, Miami Beach, Fla., Sept. 19-22. Dr. Homer D. Junkin, Paris Hospital, Paris, Ill., Secretary.

AMERICAN HEART ASSOCIATION, Yung Hotel, New Orleans, Oct. 22-26. Mr. Irving Hexter, 44 East 23d St., New York 10, Secretary.

AMERICAN HOSPITAL ASSOCIATION, Traymore Hotel, Atlantic City, N. J., Sept. 19-22. Dr. Edwin L. Crosby, 18 East Division St., Chicago 10, Director.

AMERICAN MEDICAL WRITERS' ASSOCIATION, Jefferson Hotel, St. Louis, Sept. 30-Oct. 1. Dr. Harold Swanberg, P.O. Drawer 110, Quincy, Ill., Secretary.

AMERICAN PHYSIOLOGICAL SOCIETY FALL MEETING, Tufts College, Medford, Mass., Sept. 6-9. Dr. Allan C. Burton, Univ. of Western Ontario, London, Ont., Canada, Secretary.

AMERICAN ROENTGEN RAY SOCIETY, Palmer House, Chicago, Sept. 20-23. Dr. Barton R. Young, Germantown Hospital, Philadelphia 44, Secretary.

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, Hotel Statler, Boston, Oct. 29-Nov. 3. Dr. J. Earl Remlinger Jr., Room 1101, 188 W. Randolph St., Chicago 1, Secretary.

AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, Fall Meeting, State University of Iowa, Iowa City, Sept. 4-8. Dr. Carl C. Pfeiffer, Emory University School of Medicine, Emory University, Ga., Secretary.

AMERICAN SOCIETY OF PLASTIC AND RECONSTRUCTIVE SURGERY, Atlantic City, N. J., Sept. 25-30. Dr. Kenneth L. Pickrell, Duke Hospital Durham, N. C., Secretary.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES, New Ocean House, Swampscott, Mass., Oct. 24-26. Dr. Dean F. Smiley, 185 N. Wabash Ave., Chicago 1, Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS AND SURGEONS, Chicago, Oct. 7-8. Mr. Harry E. Northam, 185 N. Wabash Ave., Chicago 1, Executive Secretary.

ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA, Hotel Statler, New York, Oct. 19-21. Dr. Henry B. Kirkland, P. O. Box 594, Newark, N. J., Secretary.

CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS, Deshler-Hilton Hotel, Columbus, Ohio, Oct. 5-8. Dr. Edwin J. DeCosta, Suite 602, 116 S. Michigan Ave., Chicago 3, Secretary.

CENTRAL NEUROPSYCHIATRIC ASSOCIATION, The Broadmoor, Colorado Springs, Colo., Oct. 20-22. Dr. Hamilton Ford, 112 North Boulevard, Galveston, Tex., Secretary.

CLINICAL ORTHOPAEDIC SOCIETY, Skirvin Hotel, Oklahoma City, Sept. 30-Oct. 1. Dr. Marcus J. Stewart, 869 Madison Ave., Memphis, Tenn., Executive Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, Drake Hotel, Chicago, Oct. 10-15. Dr. Arthur H. Dearing, 203 N. Wabash Ave., Chicago 1, Executive Secretary.

COLORADO STATE MEDICAL SOCIETY, Shirley-Savoy Hotel, Denver, Sept. 20-23. Mr. Harvey T. Sethman, 835 Republic Bldg., Denver 2, Executive Secretary.

CONGRESS OF NEUROLOGICAL SURGEONS, Hotel Statler, Los Angeles, Oct. 27-29. Dr. Philip D. Gordy, 1007 Delaware Ave., Wilmington, Del., Secretary.

DELAWARE, MEDICAL SOCIETY OF, Delaware Academy of Medicine, Wilmington, Oct. 17-18. Dr. Norman L. Cannon, 621 Delaware Ave., Wilmington, Secretary.

DISTRICT OF COLUMBIA, MEDICAL SOCIETY OF THE, Hotel Statler, Washington, D. C., Oct. 10-12. Mr. Theodore Wiprud, 1718 M St., N.W., Washington 6, D. C., Executive Director.

GERONTOLOGICAL SOCIETY, Sheraton-Belvedere Hotel, Baltimore, Oct. 27-29. Dr. Nathan W. Shock, Baltimore City Hospitals, Baltimore 24, Secretary.

GULF COAST CLINICAL SOCIETY, Pensacola, Fla., Oct. 27-28. Dr. Barkley Beidleman, 1750 N. Palafox St., Pensacola, Fla., Secretary.

INDIANA STATE MEDICAL ASSOCIATION, French Lick Springs Hotel, French Lick, Oct. 16-19. Mr. James A. Waggener, 23 East Ohio St., Indianapolis 4, Executive Secretary.

INDUSTRIAL HEALTH CONFERENCE, Shamrock Hotel, Houston, Texas, Sept. 22-23. Dr. Sidney Schnur, 411 Medical Arts Bldg., Houston 2, Texas, Chairman.

KANSAS CITY SOUTHWEST CLINICAL SOCIETY, Municipal Auditorium, Kansas City, Mo., Oct. 3-6. Dr. W. M. Kitchen, 306 E. Twelfth St., Kansas City 6e, Mo., Secretary.

KENTUCKY STATE MEDICAL ASSOCIATION, Louisville, Sept. 27-29. Mr. J. P. Sanford, 620 S. Third St., Louisville, Executive Secretary.

MICHIGAN STATE MEDICAL SOCIETY, Pantlind Hotel, Grand Rapids, Sept. 26-30. Dr. L. Fernald Foster, 606 Townsend St., Lansing 5, Secretary.

MIDWEST CONFERENCE ON RHEUMATIC DISEASES, Henry Ford Hospital, Detroit, Oct. 5. Dr. J. J. Lightbody, 7338 Woodward Ave., Detroit 2, Medical Director.

MISSISSIPPI VALLEY MEDICAL SOCIETY, Jefferson Hotel, St. Louis, Sept. 28-30. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

MISSISSIPPI VALLEY TRUDEAU SOCIETY, Hotel Savery, Des Moines, Iowa, Oct. 14. Dr. Harold G. Curtis, Sunny Acres, Cuyahoga County Tuberculosis Hospital, Cleveland 22, Chairman, Program Committee.

MONTANA MEDICAL ASSOCIATION, Baxter Hotel, Bozeman, Sept. 15-18. Mr. L. R. Hegland, P.O. Box 1692, Billings, Executive Secretary.

NEW HAMPSHIRE MEDICAL SOCIETY, Mt. Washington Hotel, Bretton Woods, Sept. 29-Oct. 1. Dr. Warren H. Butterfield, 18 School St., Concord, Secretary.

NORTH TEXAS-SOUTHERN OKLAHOMA FALL CLINICAL CONFERENCE, Wichita Falls, Tex., Sept. 17. Dr. E. C. Bebb, Broad St., Wichita Falls, Tex., Chairman.

OKLAHOMA CITY CLINICAL SOCIETY CONFERENCE, Oklahoma City, Oct. 24-27. Dr. Charles E. Leonard, 512 Medical Arts Bldg., Oklahoma City 2, Secretary.

OMAHA MID-WEST CLINICAL SOCIETY, Hotel Paxton, Omaha, Oct. 24-27. Mrs. Anne K. Ramsey, 1031 Medical Arts Bldg., Omaha 2, Executive Secretary.

OREGON STATE MEDICAL SOCIETY, Hotel Heathman, Portland, Sept. 28-Oct. 1. Dr. Richard R. Carter, 1020 S.W. Taylor St., Portland 5, Secretary.

PENNSYLVANIA, MEDICAL SOCIETY OF THE STATE OF, William Penn Hotel, Pittsburgh, Sept. 18-23. Dr. Harold B. Gardner, 230 State St., Harrisburg, Secretary.

POSTGRADUATE ASSEMBLY IN ENDOCRINOLOGY AND METABOLISM, Indianapolis, Sept. 26-Oct. 1. Dr. John J. Mahoney, Assistant Dean, Indiana University School of Medicine, 1040 W. Michigan St., Indianapolis 7.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:
Jamestown, N. D., Sept. 10. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.
Madison, Wis., Oct. 15. Dr. Howard Wakefield, 122 S. Michigan Ave., Chicago 3, Governor.

SOCIETY OF GENERAL PHYSIOLOGISTS, Marine Biological Laboratory, Woods Hole, Mass., Sept. 9-10. Dr. A. M. Shanes, National Institutes of Health, Bethesda 14, Md.

SOUTHWESTERN SURGICAL CONGRESS, Muehlebach Hotel, Kansas City, Mo., Sept. 5-7. Dr. C. M. O'Leary, 207 Plaza Court Bldg., Oklahoma City, Secretary.

TENNESSEE VALLEY MEDICAL ASSEMBLY, Read House, Chattanooga, Tenn., Oct. 3-4. Dr. Harry E. Jones, 109 Medical Arts Bldg., Chattanooga 2, Tenn., Secretary.

THE CONSTANTINIAN SOCIETY, Sheraton-Park Hotel, Washington, D. C., Oct. 26-29. Dr. C. F. Shook, P. O. Box 1035-36, Toledo 1, Ohio, Secretary.

TRI-STATE MEDICAL SOCIETY, Grim Hotel, Texarkana, Tex., Sept. 28-29. Dr. Karlton H. Kemp, 408 Hazel St., Texarkana, Ark., Secretary.

U. S. CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS, Convention Hall, Philadelphia, Sept. 12-15. Dr. Karl Meyer, 1516 Lake Shore Drive, Chicago 10, Secretary.

UTAH STATE MEDICAL ASSOCIATION, Union Bldg., Salt Lake City, Sept. 8-10. Mr. H. Bowman, 42 S. Fifth East St., Salt Lake City 2, Executive Secretary.

VERMONT STATE MEDICAL SOCIETY, Mt. Washington Hotel, Bretton Woods, N. H., Sept. 29-Oct. 1. Dr. James P. Hammond, 337 South St., Bennington, Secretary.

VIRGINIA, MEDICAL SOCIETY OF, Hotel Jefferson, Richmond, Oct. 16-19. Mr. Robert I. Howard, 105 West Franklin St., Richmond, Executive Secretary.

WASHINGTON STATE MEDICAL ASSOCIATION, Olympic Hotel, Seattle, Sept. 11-14. Dr. Frederick A. Tucker, 1309 Seventh Ave., Seattle 1, Secretary.

WESTERN ASSOCIATION OF RAILWAY SURGEONS, Las Vegas, Nev., Sept. 22-24. Dr. Leo L. Stanley, 1322 Fifth Ave., San Rafael, Calif., Secretary.

FOREIGN AND INTERNATIONAL

CANADIAN SOCIETY FOR THE STUDY OF FERTILITY, Royal York Hotel, Toronto, Ont., Canada, Oct. 6-8. Dr. Earl R. Plunkett, 469 Waterloo St., London, Ont., Canada, Secretary.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LIMNOLOGY, Helsinki, Finland, July 26-Aug. 7, 1956. For information address: Dr. H. Luther, Snellmansgatan 16 C 36, Helsinki, Finland.

CONGRESS OF INTERNATIONAL ASSOCIATION OF LOGOPEDICS AND PHONIATRICS, Barcelona, Spain, Sept. 3-7, 1956. Dr. J. Perello, Provenza 319, Barcelona 9, Spain, Secretary-General.

CONGRESS OF INTERNATIONAL SOCIETY OF HEMATOLOGY, Hotel Statler, Boston, Mass., U.S.A., Sept. 3-8, 1956. Dr. W. C. Moloney, 39 Bay State Road, Boston, Mass., U.S.A., Secretary.

CONGRESS OF INTERNATIONAL SOCIETY FOR RESEARCH ON ANESTHESIA, Miami Beach, Fla., U.S.A., Mar. 12-15, 1956. For information write: Dr. R. J. Whitacre, 13951 Terrace Road, Cleveland 12, Ohio, U. S. A.

CONGRESS OF INTERNATIONAL UNION OF RAILWAY MEDICAL SERVICES, Dubrovnik, Yugoslavia, Sept. 19-24. Dr. Jovanovic, Head Office, Yugoslav Railway, Belgrade, Yugoslavia, President.

CONGRESS OF INTERNATIONAL UNION AGAINST VENEREAL DISEASES, Naples, Italy, Sept. 25-28. For information address: Prof. Monacelli, University of Naples, Dept. of Dermatology, Naples, Italy.

CONGRESS OF LATIN SOCIETY OF OPHTHALMOLOGY, Madrid, Spain, April 24-28, 1956. For information address: Dr. Costi, Montalban 3, Madrid, Spain.

INTERNATIONAL ACADEMY OF LEGAL AND SOCIAL MEDICINE, Plenary Conference, Genoa, Italy, Oct. 13-17. Prof. Domenico Macaggi, Institut de Medicine legale, Universite de Genes, Genes, Italy, President.

INTERNATIONAL CONFERENCE OF MEDICAL LIBRARIANS AND REFERENCE LIBRARIANS, University Hall, Brussels, Belgium, Sept. 10. For information address: Miss Ch. de Looze, Librarian % Oeuvre Nationale Belge de Defense contra la Tuberculose, 56, rue de la Concorde, Brussels, Belgium.

INTERNATIONAL CONGRESS OF ALLERGOLOGY, Rio de Janeiro, Brazil, S. A., Nov. 6-13. Dr. Bernard N. Halpern, 197 boulevard St. Germain, Paris 7e, France, Secretary General.

INTERNATIONAL CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES, Philadelphia, Pa., U. S. A., Sept. 2-9, 1956. Dr. William N. Fenton, National Research Council, Division of Anthropology and Psychology, 2101 Constitution Avenue, Washington 25, D. C., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF CRIMINOLOGY, London, England, Sept. 11-18. For information write: Dr. Carroll, 28 Weymouth St., London, W.1, England.

INTERNATIONAL CONGRESS OF EUROPEAN SOCIETY OF HAEMATOLOGY, Freiburg i,Br., Germany, Sept. 20-24. Prof. Dr. L. Heilmeyer, Hugstetter Strasse 55, Freiburg i,Br., Germany, Chairman.

INTERNATIONAL CONGRESS FOR THE HISTORY OF SCIENCE, Florence and Milan, Italy, Sept. 3-10, 1956. Dr. M. L. Bonelli, Instituto di Ottica, Arcetri, Florence, Italy, Secretary-General.

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Athens, Greece, Sept. 14-18, 1956. Prof. B. Kourias, Croix-Rouge Hellenique, 1 rue Mackenzie King, Athens, Greece, Secretary-General.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Madrid, Spain, Sept. 19-23, 1956. Dr. J. C. De Oya and Dr. J. Gimena, Hostaleza No. 90, Madrid, Spain, Secretaries.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Buenos Aires, Argentina, S. A., Nov. 19-24, 1956. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF INTERNATIONAL SOCIETY OF BRONCHOESOPHAGOLOGY, Buenos Aires, Argentina, S. A., Oct. 28-29. Dr. Juan Carlos Arauz, Cangallo 4015, Buenos Aires, Argentina, S. A., Secretary General.

INTERNATIONAL CONGRESS OF LIBRARIANSHIP AND DOCUMENTATION, Brussels, Belgium, Sept. 11-18. For information write: Dr. A. C. Breycha-Vauthier, Librarian, United Nations, Geneva, Switzerland.

INTERNATIONAL CONGRESS OF MEDICAL PROFESSIONAL JURISDICTION, MEDICAL ETHICS, AND COMPARATIVE MEDICAL LAW, Paris, France, Sept. 30-Oct. 3. Dr. J. R. DeBray, Conseil National de L'Ordre des Medecins, 60, Boulevard Latour-Maubourg, Paris 7e, France, Secretary General.

INTERNATIONAL CONGRESS OF NEO-HIPPOCRATIC MEDICINE, Montecatini, Terme, Italy, May 20-22, 1956. Prof. P. Delore, 13 rue Jarente, Lyon, France, Secretary-General.

INTERNATIONAL CONGRESS OF NEUROPATHOLOGY, London, England, Sept. 12-17. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London, W.9, England, Secretary.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Copenhagen, Denmark, July 22-27, 1956. Professor P. Plum, Rigshospitalet, Copenhagen, Denmark, President.

INTERNATIONAL CONGRESS OF PHYSICAL MEDICINE, Copenhagen, Denmark, August 20-24, 1956. Dr. B. Strandberg, Kobenhavns amts sygehus i Gentofte, Dept. of Rheumatology and Physical Medicine, Hellerup, Denmark, Honorable Secretary.

INTERNATIONAL CONGRESS OF RADIOLOGY, Mexico, D. F., Mexico, July 22-28, 1956. Dr. Jose Noriega, Tepic 126 (2e piso), Mexico, D. F. 7, Mexico, Secretary General.

INTERNATIONAL CONGRESS OF WORLD CONFEDERATION FOR PHYSICAL THERAPY, New York, New York, U. S. A., June 17-23, 1956. For information address: Miss Mildred Elson, American Physical Therapy Association, 1790 Broadway, New York 19, New York, U. S. A.

INTERNATIONAL GENERAL MEDICAL CONGRESS, University of Rosario Medical College, Rosario, Argentina, S. A., Nov. 7-12. Dean Jose Imhoff, Santa Fé 3100, Rosario, Argentina, S. A., Chairman.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Brussels, Belgium, July 29-Aug. 5, 1956. For information address: Prof. J. Reuse, Faculte de Medicine et de Pharmacie, 115 Boulevard de Waterloo, Brussels, Belgium.

INTERNATIONAL PROFESSIONAL UNION OF GYNECOLOGISTS AND OBSTETRICIANS, Madrid, Spain, Sept. 28-29, 1956. Dr. Jacques Courtois, 1 rue Racine, St-Germain-en-Laye (S and O), France, Permanent International Secretary-General.

INTERNATIONAL SOCIETY FOR THE STUDY OF BIOLOGICAL RHYTHMS, Stockholm, Sweden, Sept. 15-17. For information write: Prof. Ture Petrén, Karolinska Institutet, Stockholm 60, Sweden.

INTERNATIONAL VITAMIN E CONGRESS, Cini Foundation, Island of San Giorgio Maggiore, Venice, Italy, Sept. 5-8. Prof. Emilio Raverdino, via Pietro Verri 4, Milano, Italy, Secretary.

MEDICAL JOURNALISM MEETING, Vienna, Austria, Sept. 23. For information address: World Medical Association, 345 East 46th St., New York, N. Y., U.S.A.

NEURORADIOLOGIC SYMPOSIUM, London, England, Sept. 13-17. Dr. R. D. Hoare, National Hospital, Queen Square, London, W.C.1, England, Secretary.

NORTH QUEENSLAND MEDICAL CONFERENCE, Cairns, North Queensland, Australia, June 25-30, 1956. Dr. W. R. Horsfall, P.O. Box 672, Cairns, N.Q., Australia, Secretary.

PAN AMERICAN CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, Mendoza City, Argentina, S. A., Oct. 22-26. For information address: Secretary, Caseros Av. 2154, Buenos Aires, Argentina, S. A.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY, Santiago, Chile, S. A., Jan. 9-14, 1956. Dr. Rene Contardo, Huerfanos 930, Of. 74, Santiago, Chile, Secretary General.

PAN AMERICAN MEDICAL SOCIAL CONVENTION, Bogota, Colombia, S. A., Oct. 15-22. Dr. Leopoldo E. Araujo, Avenida de los Presidentes Num. 506, Apartado 2589, La Habana, Cuba, Secretary.

PAN AMERICAN MEDICAL WOMEN'S ALLIANCE, Santiago, Chile, March 6-13, 1956. For information address: Dr. Eva Cutright, 458 Beall Ave., Wooster, Ohio, U. S. A.

VENEZUELAN CONGRESS OF MEDICAL SCIENCES, Caracas, Venezuela, S. A., Nov. 18-26. Dr. A. L. Briceno Rossi, Apartado 4412, Ofic. del Este, Caracas, Venezuela, S. A., Secretary General.

WORLD CONGRESS OF ANESTHESIOLOGISTS, Scheveningen, Netherlands, Sept. 5-10. For information write: Mr. W. A. Fentener van Vlissingen, Noordhoudringelaan, 24, Bilthoven, Netherlands.

WORLD CONGRESS ON FERTILITY AND STERILITY, Naples, Italy, May 18-26, 1956. For information address: Prof. G. Tesauro, S. Andrea della Dame, 19, Naples, Italy.

WORLD MEDICAL ASSOCIATION, Vienna, Austria, Sept. 20-26. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary General.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral.* New York City, Oct. 23-27. *Written.* Various locations in United States and Canada, July 20, 1956. Final date for filing application is Jan. 20. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* Washington, D. C., Oct. 14-16. Final date for filing application was March 15. Sec., Dr. B. M. Kesten, One Haven Ave., New York 32, N. Y.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* Portland, Ore., Sept. 14-16; Chicago, Nov. 30-Dec. 1. *Subspecialties. Cardiovascular Disease.* Chicago, Nov. 30. The closing date for acceptance of applications for gastroenterology was Feb. 1, and for cardiovascular disease the closing date was June 1. Exec. Sec., Dr. William A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* New Haven, November. Oral examinations given in Spring and Fall. Final date for filing application for the Spring examination is October 1; for the Fall examination April 1. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, St. Louis 10.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written Examination and submission of Case Reports. Part I.* Various locations in United States and Canada, Feb. 3, 1956. Final date for filing application is Oct. 1. *Oral and Pathological Examinations. Part II.* Chicago, May 11-20, 1956. Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Practical Examination.* Chicago, Oct. 3-7. Final date for filing application for 1955 practical examination was July 1, 1954. *Written.* January, 1956. Final date for filing application was July 1. *Practical Examination.* St. Louis, Oct. 20-25, San Francisco, June 18-23. Sec., Dr. Merrill J. King, Box 236, Cape Cottage Branch, Portland 9, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral.* Jan. 26-27. Final date for filing application was Aug. 15. *Written.* Various cities, April 1956. Final date for filing application is Nov. 30. Sec., Dr. Harold A. Sofield, 116 South Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 3-7. Final date for filing application is April. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: *Written and Practical.* Chicago, Oct. 6-8. Sec., Dr. William B. Wartman, 303 E. Chicago Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Chicago, Oct. 7-9; and Washington, D. C., Dec. 2-4. Admin. Sec., Mrs. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION. *Parts I and II.* Chicago, June 16-17. Sec., Dr. Earl C. Elkins, 200 First St., S. W., Rochester, Minn.

AMERICAN BOARD OF PLASTIC SURGERY: *Oral and Written.* Philadelphia, Sept. 22-24. Corres. Sec., Miss Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Certification in Public Health.* Kansas City, Mo., Nov. 10-12. Sec.-Treas., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore 5.

AMERICAN BOARD OF PROCTOLOGY: *Part II.* Philadelphia, Sept. 17. Sec., Dr. Stuart T. Ross, 131 Fulton Ave., Hempstead, N. Y.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, Oct. 17-18; New York City, December, Philadelphia, April 16-18, 1956. Sec., Dr. David A. Boyd, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: Chicago, Dec. 4. Final date for filing applications for the fall examination was July 1. Candidates who will complete their training by Dec. 31 will be eligible to appear for this examination. Sec., Dr. B. R. Kirklin, Kahler Hotel Bldg., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part I.* Centers throughout the United States, in Europe and in the Far East, Oct. 26 and March 28. Closing date for the October examination was July 1 and for the March examination is December 1. *Part II.* Buffalo, Sept. 26-27; Chicago, Oct. 27-28; New York City, Nov. 14-15; St. Louis, Dec. 12-13; New Orleans, Jan. 16-17; Los Angeles, Feb. 13-14; San Francisco, Feb. 16-17; Durham, Mar. 12-13; Boston, May 14-15 and Philadelphia, June 4-5. Sec., Dr. John B. Flick, 255 S. Fifteenth St., Philadelphia 2.

THE BOARD OF THORACIC SURGERY: *Written.* Various Centers, Sept. 9. Final date for filing applications was July 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Ave., Detroit 2.

MAGAZINE–TELEVISION REPORT

The following list of current medical articles in mass-circulation magazines and forthcoming network television programs on medical subjects is published each week only for the information of readers of THE JOURNAL. *Unless specifically stated, the American Medical Association neither approves nor disapproves of the articles and programs reported.*

TELEVISION

Monday, Sept. 5

NBC-TV, 9 p. m. EDT. "Medic" will present "All the Lonely Night," a case history of a young woman whose deep-rooted emotional problems finally lead to a physical ailment—an ulcerated colon.

Wednesday, Sept. 7

NBC-TV, 11 a. m. EDT. "Home" features a report on "Medical and Health News" with Howard Whitman.

MAGAZINES

U. S. News & World Report, Aug. 26, 1955

"What You Should Know About Drinking," by Ralph A. Habas

Extracts from a book, "How to Live Without Liquor," in which the author seeks to answer questions about the drinking problem. In an accompanying statement, Dr. W. W. Bauer, Director of the American Medical Association's Bureau of Health Education, calls the presentation "scientific yet simple, compassionate yet uncompromising, realistic yet strongly encouraging."

Family Weekly Magazine, Aug. 28, 1955

"Let's Look at Hospital Costs," by Hal Levinson

"Hospital care in the U. S. today is the best in the world; and its cost is not nearly as high, comparatively, as the cost of other goods and services in this inflationary era." The article explains the cost of room accommodations, the ... operating room, laboratory work, and drugs.

Good Housekeeping, September, 1955

"Send for an Ambulance!" by Samuel Grafton

"Several thousand ambulance organizations in this country, public and private, stand ready around the clock to perform one of the most frightening tasks that can fall to anyone—that of moving a sick or injured person from home to street to hospital." A description of the work of ambulance crews, the equipment used, and suggestions on what the reader should do if it is necessary to call an ambulance.

Parents' Magazine, September, 1955

"Is That Stomach Ache Appendicitis?" by Constance Foster

"Operated on in time appendicitis is no longer the danger it was. But too late is still too late. So familiarize yourself with the symptoms described here, be alert, not panicky, and call your doctor."

"What to Tell Your Daughter," by Margaret Albrecht

Advice on what a mother should tell her daughter about menstruation.

Cosmopolitan, September, 1955

"The Miracle Makers," by Don Short

Doctors at Brooke Army Medical Center have won unbelievable victories in their war against burns.

"Headaches," by Lawrence Galton

The author reports current treatments for severe headaches. For migraine headaches, he mentions use of ergotamine tartrate with caffeine, injections of Dramamine, a new suppository called Pentergot, and reserpine. For tension headaches, new treatments available are Pentergot, Fiorinal, Miltown, reserpine, and Mephate.

DEATHS

Bernecker, Edward Martin ✠ New York City; born in Seward, Neb., March 13, 1892; the Hahnemann Medical College and Hospital, Chicago, 1915; interned at the Metropolitan Hospital in Welfare Island, where he was resident surgeon in 1917, deputy medical superintendent in 1920, and later medical superintendent; medical superintendent of the Kings County Hospital in Brooklyn from 1935 to 1937, when he became general medical superintendent of the department of hospitals in the City of New York, serving until 1942; from 1942 to 1948 commissioner of hospitals; since January, 1949, hospital administrator of New York University-Bellevue Medical Center; served overseas during World War I; chief of the emergency medical service, New York City, from 1942 to 1945; fellow of the American College of Hospital Administrators and New York Academy of Medicine; member of the New York State Hospital Association and the American Hospital Association; died in the New York University Hospital June 27, aged 63, of a heart attack.

Reckord, Frank Frederick Dunott ✠ Harrisburg, Pa.; born in Harrisburg Sept. 15, 1886; University of Pennsylvania School of Medicine, Philadelphia, 1911; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; during World War I examiner for diseases of the heart and lungs, and associate chief of the medical service in the base hospital at Camp Devens, Mass.; part-time chief medical officer, medical division, U. S. Veterans Bureau from 1920 to 1924; medical officer of the Pennsylvania state police department from 1917 to 1936; associate director, division of tuberculosis, Pennsylvania state department of health from 1914 to 1920; served the Harrisburg Hospital in various capacities; consultant in internal medicine at the Philadelphia Freemasons Memorial Hospital in Elizabethtown; in 1932 received the honorary degree of doctor of science from Gettysburg (Pa.) College; died July 5, aged 68, of cirrhosis of the liver (Laennec's).

Sawyer, Charles Douglas ✠ Brooklyn; born in Port Chester, N. Y., July 28, 1906; Cornell University Medical College, New York City, 1931; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; member of the Industrial Medical Association, New York Surgical Society, and the Brooklyn Surgical Society; instructor in anatomy at the Long Island College of Medicine from 1935 to 1938; a major in the Medical Corps of the U. S. Army during World War II and was awarded the Southwest Pacific Ribbon and two combat stars; director of surgery at the Methodist Hospital; served on the associate attending staffs of the John E. Jennings Memorial and Kings County hospitals, and on the courtesy staff of the Peck Memorial Hospital; died in Sharon, Conn., July 10, aged 49, of recurrent myocardial infarction.

Flagg, Winthrop Maillot ✠ Burlington, Vt.; born in North Attleboro, Mass., Jan. 24, 1910; University of Vermont College of Medicine, Burlington, 1934; professor of urology at his alma mater; specialist certified by the American Board of Urology; member of the New England Surgical Society; fellow of the American College of Surgeons; interned at the Mary Fletcher Hospital; a resident in urology at the Morrisania City Hospital in New York City; attending urologist at Fanny Allen Hospital in Winooski, Mary Fletcher and Bishop DeGoesbrian hospitals; consultant in urology at the Heaton Hospital in Montpelier, Brightlook Hospital in St. Johnsbury, Orleans County Memorial Hospital in Newport, and the Beatrice D. Weeks Memorial Hospital in Lancaster, N. H.; served during World War II; died June 26, aged 45, of coronary occlusion.

Sutherland, Edward Alexander ✠ Madison College, Tenn.; born in Prairie du Chien, Wis., March 3, 1865; University of Tennessee College of Medicine, Memphis, 1914; president of Walla Walla College, College Place, Wash., from 1892 to 1897, of Battle Creek (Mich.) College, from 1897 to 1901, of Emmanuel Missionary College, Berrien Springs, Mich., from 1901 to 1904, and of Madison College from 1904 to 1946; executive secretary of the Seventh Day Adventist Commission on Rural Living from 1946 to 1950; since 1924 president of the Layman Foundation; medical superintendent of the Madison Sanitarium and Hospital from 1914 to 1940; chairman of the board of trustees of the Rural Educational Association from 1924 to 1946; editor of the *Madison Survey* from 1919 to 1946; died June 20, aged 90, of coronary occlusion.

Haverly, Norman James ✠ Commander, U. S. Navy, retired, Long Beach, Calif.; born in Omaha Jan. 24, 1894; Creighton University School of Medicine, Omaha, 1918; appointed lieutenant (j. g.) in the Naval Reserve Corps in June, 1918, and appointed lieutenant (j. g.) in the U. S. Navy in December of the same year; promoted to commander in 1942; retired Jan. 1, 1946; a veteran of more than 27 years service in the Naval Medical Corps; served in the naval hospitals at Key West, Fla., Great Lakes, Ill., Newport, R. I., Chelsea, Mass., and St. Albans, N. Y., on the U.S.S. Nansemond, Pruitt, Huron, and Wright, with the Marines in Santo Domingo, D. R., and Peking, China, and at numerous other medical department facilities throughout the world; died June 12, aged 61, of hypertension and abdominal aortic aneurysm.

Flint, Austin ✠ Venice, Fla.; born in Ballston Spa., N. Y., July 30, 1868; Bellevue Hospital Medical College, New York City, 1889; specialist certified by the American Board of Obstetrics and Gynecology; professor emeritus of obstetrics at New York University College of Medicine; professor emeritus of obstetrics at Post-Graduate Medical School of the New York University-Bellevue Medical Center; fellow of the American College of Surgeons; an associate member of the American Medical Association; on the consultant staffs of the Hospital for Special Surgery and the Woman's Hospital in New York City, Vassar Brothers Hospital in Poughkeepsie, N. Y., and the Newport (R. I.) Hospital; died in Doctors Hospital in New York City July 20, aged 86, of cerebral hemorrhage.

Malcomson, Joseph Emmett ✠ Commander, U. S. Navy, retired, Detroit; born in Detroit in 1886; Detroit College of Medicine and Surgery, 1917; specialist certified by the American Board of Physical Medicine and Rehabilitation; member of the American Society of Physical Medicine; entered the U. S. Navy Sept. 10, 1917, and retired May 1, 1937, for incapacity resulting from an incident of the service; served during World War I with the Navy Transport Service, and during World War II executive medical officer at Great Lakes (Ill.) Training Station and later senior medical officer at Notre Dame (Ind.) University; formerly an officer in charge of recruiting in Detroit and later medical examiner at the Marine Corps Recruiting Station; died July 12, aged 68, of cerebral hemorrhage.

Scholpp, Sylvan Strong ✠ Phoenix, Ariz.; born in Rochester, N. Y., Jan. 28, 1899; University of Chicago Medical School, 1938; interned at St. Luke's Hospital in Milwaukee, followed by a residency in Park Avenue Hospital in Rochester, N. Y.; engaged in private practice in Rochester for two years and then enlisted in the Army Medical Corps, where he served from August, 1942, to May, 1946, part of the time in Italy; discharged with the rank of major and entered the Veterans Administration for more surgical training; was with Veterans Administration Hospital in Temple, Texas, and later went to the Veterans Administration Hospital at Biloxi, Miss.; member of the American Academy of General Practice; died June 4, aged 56, of coronary occlusion.

McMenamin, Thomas Daniel ✠ Highland Falls, N. Y.; Cornell University Medical College, New York City, 1900; an associate member of the American Medical Association; served during World War I; a member of the selective service board at Corn-

✠ Indicates Member of the American Medical Association.

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wall during World War II; past-president of the Orange County Medical Society; health officer for Highland Falls, Cornwall-on-Hudson, the town of Highlands, and the Bear Mountain Interstate Park; an honorary member of the fire department of Highland Falls; member of the school board, on which he served as president; one of the organizers, for eight years chief of staff, and attending physician at the Cornwall (N. Y.) Hospital, where he died June 29, aged 77, of uremia and arteriosclerosis.

MacGuire, Daniel Philip ✦ Staten Island, N. Y.; born in Johnstown March 22, 1879; Columbia University College of Physicians and Surgeons, New York, 1902; a medical officer during World War I; served on the faculty of his alma mater and the Post-Graduate Medical School of the New York University-Bellevue Medical Center in New York City; fellow of the American College of Surgeons; on the staff of the New York Post-Graduate Medical School and Hospital in New York City; trustee of Marymount College, Tarrytown; served on the staff of St. Vincent's Hospital, where he died July 1, aged 76, of arteriosclerosis and lobar pneumonia.

Green, David Wright ✦ Salem, N. J.; born in Salem Aug. 31, 1891; University of Pennsylvania School of Medicine, Philadelphia, 1915; past-president of the Salem County Medical Society and the Salem County Health Association; commissioned a first lieutenant and attached to the British Army during World War I; awarded the British Military Cross by King George V "for valor displayed Sept. 27, 1918, while serving in the Medical Corps in France"; honorary chief of staff at the Salem County Memorial Hospital; fellow of the American College of Surgeons; director of the Salem National Bank and Trust Company; died July 3, aged 63, of cancer.

Myers, Dean Wentworth ✦ Ann Arbor, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1899; in 1942 president of the Washtenaw County Medical Society; fellow and formerly on the board of governors of the American College of Surgeons; past-president of the city council; served as president of the Chamber of Commerce and the Rotary Club; from 1928 to 1931 member of the city board of education; from 1943 to 1949 councilor of the 14th district of the Michigan State Medical Society; for many years on the faculty of his alma mater; died July 2, aged 81, of bronchopneumonia.

Willits, Paul Winter ✦ Grand Rapids, Mich.; born in Nahant, Mass., April 3, 1890; Northwestern University Medical School, Chicago, 1920; specialist certified by the American Board of Obstetrics and Gynecology; member of the Central Association of Obstetricians and Gynecologists; fellow of the American College of Surgeons; past-president of the Kent County Medical Society; interned at the Michael Reese Hospital in Chicago; on the staff of the Blodgett Memorial Hospital, where he died June 29, aged 65, of arteriosclerosis, diabetes mellitus, cerebral thrombosis, and carcinoma of the prostate.

May, James Virgil ✦ Marinette, Wis.; St. Louis College of Physicians and Surgeons, 1900; specialist certified by the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; past-president of the Marinette County Medical Society; member and examining physician of the Marinette County Selective Service Board during World War I and World War II; on the staff of the St. Joseph Hospital in Menominee and Marinette General Hospital; charter member of the Marinette Rotary Club; died June 12, aged 79, of a heart attack.

Gastineau, Felix Thomas ✦ Tulsa, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1918; member of the American Psychiatric Association; past-president of the Cleveland County Medical Society; at one time associated with the Indian Service; served as acting director of the Student Health Service at the University of Oklahoma in Norman and as physician at the Ellison Infirmary; served on the faculty of his alma mater; formerly on the staff of the Eastern State Hospital in Vinita; died June 3, aged 66, of coronary arteriosclerosis.

Bidwell, George Smith ✦ Waterbury, Vt.; University of Vermont College of Medicine, Burlington, 1890; affiliated with the Mary Fletcher Hospital in Burlington, the Fanny Allen Hospital in Winooski, and the Heaton Hospital in Montpelier; died July 8, aged 90, of arteriosclerosis and bronchopneumonia.

Bove, Rocco, New Haven, Conn.; The General Medical College, Chicago, 1924; director of public health in East Haven; on the staff of the Grace Hospital; died June 12, aged 57, of coronary occlusion.

Brown, Berton Milton, Delray Beach, Fla.; University of Louisville (Ky.) School of Medicine, 1917; died in Madisonville, Ky., July 11, aged 67, of a heart attack.

Burbacher, Harry Ray ✦ Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1916; also a graduate in pharmacy; vice-president of the board of trustees of Columbus Public Library; formerly trustee of the Ohio Historical Society; member of the Columbus Academy of Medicine; on the staff of the White Cross Hospital; died July 13, aged 70, of coronary occlusion and myocardial infarction.

Byrd, Edwin Samuel, Atlanta, Ga.; Atlanta Medical College, 1914; at one time on the faculty of his alma mater; on the staffs of the Grady and Georgia Baptist hospitals; died July 7, aged 62.

Campana, Vincent Ralph ✦ Jersey City, N. J.; Hahnemann Medical College and Hospital, Philadelphia, 1932; past-president of the New Jersey Chapter of the American Academy of General Practitioners; on the affiliate staffs of Margaret Hague Maternity Hospital and the Medical Center; on the staff of St. Francis Hospital, where he died July 15, aged 48, of gastric carcinoma.

Catlett, H. D., West Monroe, La.; Louisville (Ky.) Medical College, 1891; died in St. Francis Hospital, Monroe, June 16, aged 86, of cerebral hemorrhage and arteriosclerosis.

Conway, Robert Emmett, Staten Island, N. Y.; Fordham University School of Medicine, New York City, 1915; member of the Medical Society of the State of New York; served during World War I; died in St. Vincent's Hospital July 2, aged 65.

Cock, Ernest Anderson, Oak Hill, W. Va.; Detroit College of Medicine and Surgery, 1919; member of the West Virginia State Medical Association, American Public Health Association, and the American School Health Association; health officer of Fayette County; at one time a medical missionary in Alaska and Labrador; served as health officer of Randolph and Cleburne counties in Alabama; for many years school physician in Pontiac, Mich.; died in Charlottesville, Va., July 11, aged 63, of malignant hypertension.

Corea, George Thomas, Provincetown, Mass.; Tufts College Medical School, Boston, 1918; died July 4, aged 67, of coronary thrombosis.

Crutcher, Lewis Pinkerton, Long Beach, Calif.; Dunham Medical College, Chicago, 1897; died June 24, aged 81, of uremia due to chronic nephritis.

Davis, John Thomas ✦ Louisville, Ky.; Hospital College of Medicine, Louisville, 1907; an associate member of the American Medical Association; died June 14, aged 76.

Dehoney, Howard, Philadelphia; Jefferson Medical College of Philadelphia, 1892; died in Jefferson Hospital July 4, aged 85.

Denison, Charles Milton ✦ Harrisburg, Pa.; University of Buffalo School of Medicine, 1911; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association; on the staff of the Harrisburg State Hospital; died June 19, aged 67, of heart disease.

Dennen, Joseph Horace, Washington, R. I.; Harvard Medical School, Boston, 1902; died in Hope Valley June 20, aged 82, of cancer.

Dewey, Fred Norton ✦ Maumee, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; formerly practiced in Elkhart, Ind., past-president of the Elkhart County Medical Society and served as county coroner; died in the Flower Hospital, Toledo, July 8, aged 91, of arteriosclerosis.

Donovan, Roscoe P., Hoopeston, Ill.; St. Louis College of Physicians and Surgeons, 1906; died June 25, aged 70, of a heart attack.

Farrell, John Hogan, Atherton, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; died July 10, aged 72, of cerebral hemorrhage.

Feaman, Albert Cole, Seattle; University of Minnesota Medical School, Minneapolis, 1921; served during World War I; formerly affiliated with the Veterans Administration; died in the Maynard Hospital July 10, aged 65, of heart disease.

Frickman, Oscar A., Newport, Ky.; Medical College of Ohio, Cincinnati, 1896; president of the board of education from 1912 to 1918; on the staff of the Speers Memorial Hospital in Dayton, where he died June 27, aged 87, of cerebral thrombosis.

Gade, Carl Johannes ✠ Bridgeport, Conn.; Yale University School of Medicine, New Haven, 1910; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; past-president of the Bridgeport Medical Society; served on the draft board during World War II; consultant and surgeon, crippled children's division of the state board of health; on the staff of St. Vincent's Hospital, where he died June 19, aged 69, of myocardial infarction.

Glatter, Zoltan ✠ East Moline, Ill.; Magyar Királyi Pázmany Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1923; assistant superintendent of the East Moline State Hospital; formerly on the staff of the Dixon (Ill.) State Hospital; died in White Pigeon, Mich., June 17, aged 62, of injuries received in an automobile accident.

Hamil, James Young ✠ Decatur, Ala.; Medical College of Alabama, Birmingham, 1916; died in Birmingham April 28, aged 62, of coronary thrombosis.

Harris, Bunn ✠ Jenks, Okla.; University of Arkansas School of Medicine, Little Rock, 1913; an associate member of the American Medical Association; served during World War I; died July 5, aged 66, of coronary insufficiency.

Hinshaw, Sylvester Ellsworth, Escondido, Calif.; Drake University College of Medicine, Des Moines, Iowa, 1912; died in Poway June 3, aged 78, of arteriosclerotic heart disease.

Hunt, Preston, Texarkana, Texas; Atlanta College of Physicians and Surgeons, 1901; fellow of the American College of Surgeons; member of the House of Delegates of the American Medical Association in 1938 and 1940; past-president of the State Medical Association of Texas and the Bowie County Medical Society; past-president of the Lions Club; on the staff of the Texarkana Hospital; died in Pampa July 10, aged 89.

Irwin, George Allan Lyall, La Jolla, Calif.; M.B., 1912, and M.D., 1921, Queen's University Faculty of Medicine, Kingston, Ontario, Canada; died in Southampton, N. Y., June 27, aged 67, of coronary occlusion.

Jackson, Walter B. ✠ Waxahachie, Texas; College of Physicians and Surgeons, Dallas, 1907; past-president of the Ellis County Medical Society; formerly city health officer at Alvarado and also served in that capacity in Waxahachie; died June 29, aged 76, of congestive heart disease.

Jacobson, Julian C. ✠ Santa Cruz, Calif.; University of Minnesota Medical School, Minneapolis, 1937; past-president of the Santa Cruz County Medical Association; served during World War II; on the staffs of the Santa Cruz and Sisters hospitals; died July 1, aged 49, of coronary occlusion.

Jardini, Alessandro S., Los Angeles; Regia Università di Torino Facoltà di Medicina e Chirurgia, Italy, 1902; served in the Italian Army during World War I; on the staff of the French Hospital; died July 9, aged 77, of intestinal obstruction.

Jefferies, Charles A., Gaffney, S. C.; Medical Department of Tulane University of Louisiana, New Orleans, 1890; died in the Mountain Sanitarium and Hospital in Fletcher, N. C., June 27, aged 87, of cerebral arteriosclerosis.

Kelly, Raymond Martin ✠ Chicago; Loyola University School of Medicine, Chicago, 1916; a medical officer during World War I; served on the staff of St. Anne's Hospital, where he was first president of the hospital board; died July 15, aged 64, of rheumatic heart disease.

Knowlton, Florence Emerson Honey, Pacific Grove, Calif.; Tufts College Medical School, Boston, 1920; died July 12, aged 65.

Lampson, Edward Rutledge ✠ Hartford, Conn.; Columbia University College of Physicians and Surgeons, New York City, 1896; member of the founders group of the American Board of Surgery; fellow of the American College of Surgeons; past-president of the Hartford County Medical Society and the Hartford Medical Society; for many years on the staff of the Hartford Hospital, where he died June 24, aged 87, of coronary thrombosis.

Lombardo, Theodore Roosevelt ✠ Brooklyn, N. Y.; Long Island College of Medicine, Brooklyn, 1936; served during World War II; for many years on the medical staff of St. Mary's Hospital and Brooklyn College; died in St. Vincent's Hospital July 20, aged 45.

Love, Thomas Stafford ✠ Dallas, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1920; specialist certified by the American Board of Otolaryngology; served during World War I; formerly on the faculty of Southwestern Medical School of the University of Texas; on the staffs of Baylor University Hospital, Medical Arts Hospital, Parkland Hospital, and Texas Scottish Rite Hospital for Crippled Children; died June 26, aged 59, of myocardial infarction.

Lyon, James Ira ✠ Edmond, Okla.; Kansas City (Mo.) Medical College, 1892; past-president of the board of education; died in the Wesley Hospital, Oklahoma City, July 11, aged 85, of cerebral thrombosis.

Merkel, George Albert ✠ Minersville, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1904; an associate member of the American Medical Association; president of the First National Bank and Home Building and Loan Association; on the staff of the Warne Hospital, Pottsville, where he died May 18, aged 73, of intestinal obstruction.

Miltenberger, Val E. ✠ Lieutenant colonel, U. S. Army, retired, Kirksville, Mo.; St. Louis University School of Medicine, 1904; entered the U. S. Army in 1917; became a lieutenant colonel in April, 1937; retired Nov. 30, 1937; returned to active duty from February, 1943, to Jan. 31, 1945; died in Albuquerque, N. Mex., July 14, aged 74.

Osborn, Howard A., Grand Rapids, Mich.; Detroit College of Medicine, 1906; served during World War I; formerly practiced in Detroit, where he was on the staff of the Harper Hospital; for many years on the staff of the Burleson Hospital; died in the Butterworth Hospital July 19, aged 72.

Pargen, Thomas Houston, Austin, Texas; Georgetown University School of Medicine, Washington, D. C., 1926; member of the Southern Psychiatric Association and the American Psychiatric Association; served during World War II; for a time a member of the staff of Austin State School; recently served on the staff at McKnight State Sanatorium in Sanatorium; died in Brackenridge Hospital July 8, aged 52, of congestive heart disease.

Perry, Seth Bridgman, Hopewell, Va.; Medical College of Virginia, Richmond, 1914; member of the Medical Society of Virginia; for many years vice-mayor and city councilman; died June 21, aged 67, of a heart attack.

Perusse, George Louis ✠ Chicago; Jenner Medical College, Chicago, 1908; member of the Industrial Medical Association; at one time superintendent of the Michael Reese Hospital; on the staffs of the Columbus Memorial Hospital and the Grant Hospital, where he died July 15, aged 79, of calcified aortic stenosis and arteriosclerosis.

Pond, Bernard Wesley ✠ Newton, Mass.; Harvard Medical School, Boston, 1901; died in the Newton-Wellesley Hospital Aug. 1, aged 81, of heart disease.

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Powell, Daniel Drury, Jackson, Ala.; Tulane University of Louisiana School of Medicine, New Orleans, 1953; interned at the Charity Hospital of Louisiana in New Orleans; resident at the Huey P. Long Charity Hospital in Pineville, La.; died July 20, aged 28, of coronary occlusion.

Reinsch, Frank, Ashton, Iowa; Chicago College of Medicine and Surgery, 1917; at one time county coroner; served during World War I; for many years a member and president of the school board; died in Osceola (Iowa) Hospital July 5, aged 61, of cancer.

Renshaw, John B., Glendale, Calif.; Medical Department of Tulane University of Louisiana, New Orleans, 1888; died June 27, aged 88, of cancer.

Reynolds, John Andrew ✙ Springfield, Mass.; Long Island College Hospital, Brooklyn, 1922; served on the staffs of the Wesson Memorial Hospital and the Springfield Hospital, where he died June 28, aged 62, of arteriosclerotic heart disease.

Robbins, Agnes Louise ✙ Kansas City, Kan.; University of Kansas School of Medicine, Kansas City, 1945; interned at St. Margaret's Hospital; member of the American Academy of General Practice; on the staffs of St. Margaret's and Providence hospitals and the Bethany Hospital, where she died July 15, aged 47.

Rose, James Madison, Olive Hill, Ky.; University of Louisville Medical Department, 1909; member of the Kentucky State Medical Association; past-president of the Carter County Medical Society; served as mayor of Olive Hill, and as state senator from 1928 to 1936; president of the People's Bank of Olive Hill; member of the board of regents of Morehead (Ky.) State College; died July 5, aged 69, of a heart attack.

Rosenthal, Julius Mordecai ✙ Monticello, N. Y.; University and Bellevue Hospital Medical College, New York City, 1906; member of the American College of Chest Physicians; an associate member of the American Medical Association; served on the board of the Monticello Hospital; died in Miami Beach, Fla., July 10, aged 77.

Ross, Floyd Freeland ✙ Berkeley, Calif.; Howard University College of Medicine, Washington, D. C., 1927; on the staff of the Herrick Memorial Hospital; died July 6, aged 54, of heart disease.

Rowe, Mary Virginia Copeland, Marion, N. C.; Tulane University of Louisiana School of Medicine, New Orleans, 1939; member of the Medical Society of the State of North Carolina; interned at the Guilford County Sanatorium in Jamestown and the Crawford W. Long Memorial Hospital in Atlanta, Ga.; died in the Marion General Hospital May 23, aged 40, of pancreatitis and chronic cholecystitis.

Rucks, William Ward ✙ Oklahoma City, Okla.; University of Nashville (Tenn.) Medical Department, 1897; served during World War I; member of the Association of Life Insurance Medical Directors of America; formerly medical director of the Home State Life Insurance Company; co-founder and on the staff of the Wesley Hospital, where he died July 14, aged 80, of myocardial infarction.

Saunders, Griffin Augustus ✙ Philadelphia; Medico-Chirurgical College of Philadelphia, 1914; for 25 years served with the city department of health; on the staff of the Mercy-Douglas Hospital for many years; died in the Hospital of the University of Pennsylvania June 25, aged 66, of carcinoma of the tongue with metastases.

Schmidt, William Francis ✙ Philadelphia; The General Medical College, Chicago, 1923; on the staffs of the Frankford and Episcopal hospitals; died in the Jeanes Hospital May 28, aged 71, of cerebral thrombosis.

Seely, Richard Henry ✙ Trenton, N. J.; Jefferson Medical College of Philadelphia, 1945; specialist certified by the American Board of Ophthalmology; served during World War II; formerly a resident in ophthalmology at the Wills Hospital in Philadelphia, where he was later an associate ophthalmologist; interned at St. Francis Hospital, where he was an associate ophthalmologist, and where he died July 17, aged 34, of chronic lymphocytic leukemia.

Siekerman, Clairmont William ✙ Indianapolis; University of Louisville (Ky.) School of Medicine, 1933; on the staff of Methodist Hospital; died June 11, aged 52, of coronary occlusion.

Sleeter, Robert William ✙ Medford, Ore.; University of Oregon Medical School, Portland, 1937; interned at Sacramento (Calif.) County Hospital; served during World War II; died in Arco, Idaho, July 14, aged 43, of coronary occlusion.

Sostek, Samuel Bertram, Malden, Mass.; Boston University School of Medicine, 1937; member of the Massachusetts Medical Society; interned at the Jewish Hospital in Brooklyn, N. Y.; served a residency at the Boston City Hospital; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; served during World War II; died in the Massachusetts Memorial Hospital in Boston May 1, aged 45.

Summers, James Arthur ✙ Little Rock, Ark. (licensed in Arkansas in 1903); for 22 years health officer of Pulaski County; at one time health officer of North Little Rock; died July 7, aged 74, of myocardial infarction and cancer of the prostate.

Tompkins, Archibald, Savannah, Ga.; Meharry Medical College, Nashville, Tenn., 1911; died in the Charity Hospital June 7, aged 70, of cerebral hemorrhage, hypertension, and chronic interstitial nephritis.

Tracy, Elizabeth Roberts Cahoon, Sanford, Fla.; New York Medical College and Hospital for Women, Homeopathic, New York City, 1900; died in Deland July 23, aged 91, of hypostatic pneumonia and myocardial degeneration.

Walker, Arthur Bruce, Lincoln, Neb.; John A. Creighton Medical College, Omaha, 1906; died in St. Elizabeth Hospital July 4, aged 77, of cerebral thrombosis, hypertension, and arteriosclerosis.

Walker, John Keasbey ✙ Haverford, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; an associate member of the American Medical Association; died in the Bryn Mawr (Pa.) Hospital June 18, aged 77, of cerebrovascular disease.

Wallingford, William H., Princeton, W. Va.; Hospital College of Medicine, Louisville, Ky., 1907; past-president of the Mercer County Medical Society; served as chief surgeon at the Princeton Hospital, which he established; died in Salem, Va., July 18, aged 75, of pneumonia and arteriosclerotic heart disease.

Watkins, Benjamin F., Jackson, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1905; died in the Veterans Administration Hospital in Atlanta May 11, aged 74, of uremia and chronic pyelonephritis.

White, Thomas Watson, Houston, Texas; University of Texas School of Medicine, Galveston, 1898; veteran of the Spanish-American War; died July 4, aged 79, of arteriosclerosis and hypertension.

Wood, Joseph Benjamin, Marietta, Ga.; University of Georgia Medical Department, Augusta, 1898; died May 29, aged 89, of pneumonia and hypertension.

Wright, Daniel Paul, Patton, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1913; died in the Southeast Missouri Hospital, Cape Girardeau, May 17, aged 76, of acute coronary occlusion.

CORRECTION

Krakowski, Joseph.—The obituary of Dr. Adam Joseph Krakowski (THE JOURNAL, July 30, 1955, page 1186), was erroneous. The physician referred to was Dr. Joseph Krakowski of Staten Island, N. Y., who graduated from the University of Poznan in Poland in 1933, was a resident physician on the staff of the Richmond Memorial Hospital, and died May 12, aged 48, of perforated duodenal ulcer.

FOREIGN LETTERS

BELGIUM

Complications of Gastrectomy.—At a meeting of the Belgian Gastroenterological Society in November, Godart and Van Lerberghe said that after gastrectomy anemia and the dumping syndrome were well known. In a series of 40 patients who had a dumping syndrome, each patient was examined with ordinary barium and with sweetened, lactated barium to induce the dumping syndrome. The authors concluded that in all patients the motor disturbances are associated with stomal incontinence and a dilatation of the jejunum. With endoscopy the development of a dilatation due to hypotonia rather than to internal hypertension is seen. The authors saw no dilatation in the jejunum on radiography, but they did see it in the ileum. Thickening of the folds, usually attributed to jejunitis, seemed to them to be caused by hypotonia of the mucosa. This concept was supported by the fact that dilatation was produced with lactated barium but not with plain barium. The ileum is hypertonic and segmented. This hypotonia followed by hypertonia determines the speed of transit, which is always rapid. Bargen explained this as follows: if peristalsis encounters a hypotonic loop, churning and arrest occur. This also explains why patients with gastrectomy rarely have diarrhea. In the dog, electric stimulation of the proximal end of the stomach causes jejunal hypotonia and ileal hypertonia. To avoid this one must section the sympathetic nerve, and not the vagus. Excitation can also explain chronic hypotonia in man.

Fight Against Poliomyelitis.—At the March meeting of the Belgian Health and Social Medicine Society, Dr. Recht pointed out that it is difficult to organize a program for the control of poliomyelitis because of the unpredictable characteristics of the epidemic and the scarcity of prodromal symptoms. In setting up such a program it was decided that four university centers with two extra centers, one at Anvers and one at Charleroi, would be better than one. The country now has 35 iron lungs, 7 thoracic cuirasses, and 14 Engström respirators. In 1950 the Inter-University Foundation for the Treatment of Virus Diseases and Poliomyelitis was created, and in 1954 the Princess Josephine Charlotte Center of Studies was started. Financial assistance for victims of poliomyelitis is provided by the Sickness-Disability Insurance and the Public Welfare Commission. Since April 10, 1952, a special fund covers treatment expenses of patients with poliomyelitis. In July, 1950, the National Radiodiffusion Institute launched a movement called the "Chain of Happiness." These funds go for the help of children with poliomyelitis over a period of several years, either by paying for their treatment or helping to buy prostheses. In 1943 the National Defense League Against Poliomyelitis was started to coordinate research and direct aid to patients.

Antipoliomyelitic Antibodies.—At a meeting of the Royal Academy of Medicine in 1954, Quersin-Thiry and Dekegel stated that 42% of the children under 10 in Belgium have antibodies against the three types of poliomyelitis virus and 90% of them have antibodies against at least one type. After the age of 10, immunization proceeds slowly and the situation is hardly changed up to the late 20's. Thus, between 10 and 17% of persons under 30 have no immunity to any type of poliomyelitis virus. There is little difference between the types of virus regarding the frequency with which persons become immunized, but the three types are not equal with respect to the intensity of this immunization. Among persons with antibodies against type 3 virus, 60% have an elevated serum titer, while such a titer is found in only 22% of those immunized against type 2 and in 33% of those with anti-type 1 antibodies. The antibody titer is generally less in persons aged from 5 to 29 years than in adults or children under 5, except for those of less than 6 months, in whom it is very low.

The items in these letters are contributed by regular correspondents in the various foreign countries.

BRAZIL

Carcinoma of the Liver.—In the *Annals of the Medical School of Recife*, Dr. Adonis Carvalho reviewed 2,797 autopsies performed at the department of pathology of the University of Recife and concluded that the incidence of primary carcinoma of the liver was 0.57% or similar to that found in the United States and Europe. There appears to have been no increase in the incidence of this disease in the last 10 years. The incidence was greatest in the age group of 40 to 49 years, which suggests that the onset of the disease is earlier here than in other countries. The ratio of men to women affected was 4:1. The relation of hepatic cancer to cancers in other parts of the body is a little higher here than in the United States and Europe and lower than in Africa. The incidence of this disease in persons with hepatic cirrhosis is greater than in persons without hepatic cirrhosis. No relation was found between schistosomiasis and primary carcinoma of the liver. Liver cell carcinoma is almost four times as frequent as bile duct carcinoma. Hepatomegaly and splenomegaly are almost always present in patients with hepatic cancer. The starting point is often the right lobe, but intrahepatic metastasis occurred in practically every case. The extrahepatic metastases were found most often in the lungs and the spleen.

Postoperative Care.—Dr. Fernando Paulino reported in *Revista Brasileira de Cirurgia* (vol. 29, April, 1955) a series of 200 patients subjected to major operations, mostly in the upper gastrointestinal tract, to whom postoperatively he gave intravenous infusions of dextrose, amino acids, alcohol, electrolytes, and vitamins. More than 1,600 liters of this solution were injected, and no undesirable reactions were observed. The solution provides about 1,000 calories per liter. Thus, sufficient calories can be given without overhydration of the patient. The intravenous use of alcohol did not interfere with the patient's water, sodium, and potassium balance or with the nonprotein nitrogen level, and positive nitrogen balance was maintained by parenteral administration of therapy alone. Urinary excretion of glucose seldom occurred, and when it did occur it was corrected by reducing the speed of the injection. The author concluded that positive nitrogen balance is a definite aid to the recovery of patients subjected to major operations.

ENGLAND

Comet Aircraft Disaster Autopsies.—A report by Stewart and Whittingham (*Lancet* **1**:1136, 1955) of the postmortem findings in the bodies recovered after the two Comet aircraft disasters over the Mediterranean Sea in 1954 includes the findings of the experimental work carried out on animals as an aid in interpreting the cause of death of the victims of the crashes. At the time of the disasters, both Comets had reached an altitude of about 30,000 ft. during the initial climb. At this height the air pressure inside the cabin is about 7.5 lb. per square inch above that prevailing outside. All but 5 of the 19 bodies examined had antemortem fractures of the skull, and 15 had similar injuries of the thoracic cage, mostly of exceptional severity. Spinal fractures and costovertebral dislocations were common. Limb fractures, found in 13 bodies, were predominantly sustained post mortem. Grave internal injuries were present in all the bodies, even in those with little external injury. Thus, hemothorax, of 0.3 to 2 liters, was present in 13, and the lungs were severely damaged in all cases. In no case was there evidence of drowning. Hemoperitoneum (up to 1 liter) was present in 14 and hepatic laceration in all cases. Tears of the spleen were found in only five and severe injury to the lungs was found in all cases. Macroscopically lung injury consisted of congestion, bruising, laceration, pulping, and areas of ballooning, with subpleural bullae. Microscopically the findings were traumatic

emphysema, hemorrhage, vascular engorgement, and fat embolism. From an analysis of the autopsy findings, it was concluded that in all probability the pulmonary lesions were not caused by an explosion, the reasons being: (1) in none of the bodies recovered (including that of a child aged 10 years) did the subpleural hemorrhages show a pattern of rib markings; (2) the lungs of all had much the same appearance, whereas in explosion, a significant variation in the degree of injury might be expected, people seated near the source being most severely affected; (3) in no case was blood or froth present in the nose, mouth, or elsewhere in the upper respiratory passages; (4) none of the bodies had skin lesions attributable to peppering with metallic fragments or other missiles; and (5) none had burns such as are caused by naked flame. Also, there was no evidence of a bomb explosion or of any fire inside the cabin of the aircraft.

An interesting difference between the bodies recovered from the two disasters was noted in the skin. In the bodies recovered from the Elba crash the skin lesions, called "burns" for convenience, showed histological evidence of tissue destruction and affected predominantly clothed areas; however, no evidence of exposure to flame or searing temperatures was seen. In the bodies recovered from the Naples crash the skin lesions, called "darkening" for convenience, involved exposed skin only, and again, there was no evidence of exposure to flame or searing temperatures. It was concluded that the Elba bodies were subjected to postmortem scalding of the skin as a result of fire starting after they had fallen into an area covered by a kerosene film. The Naples bodies showed no scalds but instead a postmortem darkening of the pigment (the Meirowsky phenomenon) as the result of exposure to bright sunlight.

The final reconstruction of the course of events from the medical evidence is that the injuries were inflicted in three distinct phases: in the aircraft, on impact with the sea, and while the bodies were floating in the water. The head injuries, certain abrasions, and at least some fractures of the thoracic cage were acquired in the aircraft as a result of an extremely violent upward and forward displacement of the seated occupants as a result of sudden cabin failure. This would be sufficient to cause death. As the aircraft disintegrated, all or most of the passengers were ejected and fell into the sea. All the available evidence indicates that forces generated by impact with a water surface after such a fall must cause grave injury to the internal organs. The nature of the internal injuries in the bodies recovered, including the pulmonary lesions, is consistent with their having been caused for the most part in this way. Other injuries probably received at the same time include fractures of the limbs and spine and further damage to the thoracic cage. The injuries received while floating in the sea have already been described.

Mental Hospitals.—The King Edward's Hospital fund for London has issued a report on the 27 mental hospitals, with 46,000 beds, and the 9 mental deficiency hospitals, with 14,000 beds, in the area covered by the fund. The average age of these hospitals is said to be well over 50 years, and most of them date from the time when the mentally ill were looked on primarily as potential dangers to the community. In some hospitals the patients' clothes are still rolled into bundles and tied to their beds at night, since no storage space is provided for them. Overcrowding occurs to a degree unknown in other hospitals because a mental hospital cannot refuse to admit a certified patient even if there is literally no bed and the patient has to lie on a mattress on the floor. The position with regard to nursing staff is equally unsatisfactory. The Nightingale conception of the matron as mistress of the homestead and responsible to the governing body, not only for the nursing care of the patients but also for all domestic matters affecting the well-being of patients and staff, does not appear to have been accepted in the mental hospitals as it has in all other hospitals. A committee appointed to advise the Birmingham Regional Hospital Board on the standards of staffing required in mental hospitals has recommended that the average ratio of total nursing staff to patients should be 1:4. In England and Wales at present the ratio does not reach 1:6 patients. The number of student nurses in all mental and mental deficiency hospitals has fallen by more than 25% since 1948, giving the ratio of one student nurse to 42.5 patients as compared with one to 3.1 patients in general hospitals.

It is estimated that about $1,540,000 would be needed merely to put in modern catering facilities in the mental hospitals in the fund's area. It is further estimated that to bring the standard of the diet in these hospitals up to that of the regular diet in general hospitals, an increased expenditure of 70 cents per head per week would be required. The King Edward's Hospital Fund for London, which was founded over 50 years ago for the benefit of the voluntary hospitals of London, is aware of the needs of the mental patients in the area which it serves. In the last six years, grants of about $378,000 have been made. The council of the fund, however, has decided to make an allocation to the mental and mental deficiency hospitals of not less than $700,000, spread over three years. Of this sum, it is proposed to earmark $280,000 for three major schemes. The first of these is the establishment of an occupational center at one hospital, which will provide much more than occupational therapy in the restricted sense in which the term is usually understood. Its aim is not only to treat the patient at the more acute stage of his illness but also to prepare him thoroughly for his return to the community; the second is the establishment of a social center at Warlingham Park Hospital; and the third is the establishment of a community center and day hospital in connection with the psychiatric outpatient department of a general hospital on the outskirts of London. The aim of this venture is, so far as possible, to retain the mentally disturbed patient out of a hospital and in his own community.

Employment of Epileptics.—The total number of epileptics on the register of disabled persons is 16,267, or nearly 2% of the total register, according to Sir Godfrey Ince, permanent secretary, Ministry of Labor and National Service, in a speech at the annual meeting of the British Epilepsy Association. This is an increase of 1,189 in the last five years. Of the total on the register, 1,670 are unemployed, a decrease of 103 in five years. The disappointingly small decrease is due in part to the fact that most of the new registrants were unemployed. On the other hand the number of severely disabled unemployed, that is, those requiring sheltered employment, has decreased by 43. This is attributed, in part at least, to the work that has been done in providing sheltered employment by Remploy Ltd., the organization that is providing work in special factories for the severely disabled. Over 400 epileptics are employed by the company, and this represents 7% of their total of severely disabled employees. They find that epileptics on the whole make satisfactory employees. In addition, about 300 epileptics enter the Ministry of Labor's industrial rehabilitation units every year. In these units they spend an average of eight weeks on a course that is aimed at giving them a general toning up, while assessment of their capabilities for employment is made. Of the 300, about 50 leave without completing the course, mainly on health grounds, and of the remaining 250, over 80% are placed in employment or training. In a recent survey of the progress of 7,000 disabled men and women leaving these units, it was shown that, as against an average of 80% for all disabilities, only 56% of epileptics reported satisfactory resettlement six months after they had entered employment. It is the universal experience in the industrial rehabilitation units that, handled with understanding, the epileptic readily settles down to work and can acquit himself as well as the best. Once he realizes that a seizure is not going to cause consternation to anyone, a steady improvement sets in, and the frequency and duration of the seizures diminish. With many, the seizures disappear entirely.

Midwife in the Maternity Service.—In the revised version of its "Memorandum of Policy," published by the Royal College of Midwives, the view is expressed that the routine antenatal care of the expectant mother should be recognized as the duty of the midwife in association with the physician who is responsible for general medical care and attendance. Many physicians are now undertaking antenatal care in their own offices, but this does not absolve the domiciliary midwife from taking her full share of responsibility during the antenatal period. In hospital practice, where obstetricians attend every antenatal clinic, it is considered essential that there be antenatal sessions

conducted by midwives. Classes for the mothers in antenatal clinics should be organized by the midwife in cooperation with other members of the health team. The midwife herself should give the teaching on the physiology of labor and the preparations for it, the use of inhalational analgesics, the preparations for the baby, and breast feeding. Provided that she has had the appropriate experience, the midwife may and often does give instruction on relaxation and antenatal exercises to small groups of mothers. Assessment of the suitability of the home conditions for confinement should be made by the midwife in consultation, where necessary, with the patient's family physician. Every mother should be under the constant care of a midwife during the whole course of her labor. Although a physician may be present for part of the time, the midwife should continue to take full responsibility for most normal deliveries. As she can administer inhalational analgesics and, under the Dangerous Drugs Act, can give certain pain-relieving drugs, it is within her power, and it is her duty, to give the mother adequate relief from pain during labor. During the postnatal period the mother and baby should be looked after by the same team as cared for them during pregnancy and labor. The college deplores the practice of some hospitals of sending the mother and baby home, or to other premises, within a few days of confinement, since this makes it impossible to give continuity of care. The care of mothers and babies should remain the responsibility of midwives for at least 28 days. The college also believes that premature babies should be nursed by midwives.

Drugs for Private Patients.—At the recent annual representative meeting of the British Medical Association a motion that private patients have an equal right to free medicine was unanimously carried. This is one of the most keenly debated questions at present. Most physicians are in favor of it, but the Minister of Health has consistently refused to approve this measure. Hitherto, one of his arguments has been that such a concession could not be made without controls equivalent to those accepted by physicians under the National Health Service and that he had been advised that private physicians were not prepared to accept such controls. This last statement is denied by the profession. In the discussion it was reported that the Bristol Local Medical Committee had sent out a questionnaire on this point to 253 practitioners in the area. Of 240 replies, only 3 expressed unwillingness to accept such conditions. One speaker pointed out that it was far from true that the private patients were the wealthier members of the community. Some of the wealthiest patients use the service, while some of the most impecunious have elected to remain private patients. Private patients are classified as those who (1) were too old for insurance contributions in 1948 and who, as a class, are dying out; (2) preferred on principle to pay for their physician's services; and (3) were accustomed to consulting their physicians in private and who believed that it would be unfair to call on a state-employed physician to attend them in this way. If all the remaining private patients decided to put themselves on the lists of National Health Service physicians and were accepted, the government would have to pay a capitation fee for each one of them and provide all the drugs needed. The refusal of the government to accede to the request for free drugs was described as stupid and unjust. Strong exception was also taken to the statement of the committee presided over by Sir Henry Cohen, a former president of the association, that the granting of this concession to private patients would introduce a double standard of practice into private practice. What evidence, it was asked, was there that general practitioners were less considerate of their National Health Service patients than of their private patients?

Commonwealth Tuberculosis Conference.—One of the highlights of the fourth Commonwealth Health and Tuberculosis Conference, organized by the National Association for the Prevention of Tuberculosis and held in London in June, was the presentation of the Sir Robert Philip medal to Dr. P. V. Benjamin, technical adviser on tuberculosis to the government of India, and president-elect of the International Union Against Tuberculosis. The presentation was made by the Duchess of Kent. This is the first award of the medal, which is being given in honor of Sir Robert Philip, the founder of the first tuberculosis dispensary. One of the papers read at the meeting reported the preliminary findings of a combination of thiosemicarbazone and isoniazid. It is claimed that in the experimental animal the new drug is active against the tubercle bacillus, is nontoxic, and so far has produced no drug-resistant organisms. The results of a small clinical trial were encouraging enough to justify a more extensive trial. In another paper Dr. R. G. Cochrane deprecated some of the more optimistic claims being made for chemotherapy and BCG vaccination in the control of leprosy. He noted that relapses were being reported 15 years after sulfones had produced "clinical cures."

Question of Medical Etiquette.—During the recent railway strike a part-time consultant to the board of governors of the United Birmingham Hospitals sent the following letter to one of the strikers: "I am afraid that my principles prevent me from seeing patients on strike except in cases of emergency. Do you mind postponing the visit with your wife? If you will phone for an appointment when the strike is over I will try to fix a convenient date." The striker's member of Parliament, a member of the socialist opposition, raised the matter in the House of Commons and asked the Minister of Health whether the attitude of the physician was not completely unethical and whether this was not political discrimination. In reply the Minister of Health said that if there was any question of a breach of contract within the service, then, that was a matter for which he was answerable and which he would be glad to answer. The question of medical etiquette was not for him to decide nor was the matter of the private arrangements a physician might wish to make with his private patients.

Model Child Welfare Center.—On May 26, the Province of Natal Center of the London University Institute of Child Health was opened. The cost of the center was met by a gift of $336,000 from the people of Natal. This sum represents the balance of the "Salute to Britain Fund," which Natal collected as a gesture of sympathy for Britain during World War II. The center, which is adjacent to the Hospital for Sick Children on Great Ormond Street, is intended as a model welfare center and includes provision for child guidance, consultant and minor ailment clinics for school children, and dental clinics. It will be used by the London County Council as one of its maternity and child welfare centers. A house committee, with representatives of the London County Council, the two borough councils from which most of the children will be drawn, and the Institute of Child Health, will control general policy. The London County Council has undertaken to defray 90% of the cost of maintenance and all the salaries of the medical and nursing staff.

De-Ists.—In an editorial note in *Transactions of the Royal Society of Tropical Medicine* (**49**:288, 1955), Sir William MacArthur explains that the terms "delouse" and "deflea" are banned in this publication because they are unnatural monsters with Latin heads and English bodies and because native words for these operations—namely "louse" and "flea"—have been used in classical English for centuries and have the advantage of being shorter than their unscholarly substitutes. He concludes his note thus: "Rooms are dusted; gardens, weeded; plants, snailed; trees, barked; grain, husked; elbows, skinned; teeth, scaled; nuts, shelled; potatoes, peeled; gooseberries, topped and tailed; fish and houses, gutted; dogs, wormed; and a poor bird, victim of a half-missed shot, may be feathered." The superfluous Latin "de" would be no more out of place in these English words than it is in those others specifically mentioned. There is no need for the de-ists to out-Latin the Latinists—the verb *pediculare* (not de-pediculare) meant: to free from pediculi.

Perambulating Patient.—In his annual report for 1954-1955, the chairman of the Chester Executive Council reports that for the first time since the inauguration of the National Health Service, the Allocation Committee had to be called. A patient had applied for inclusion in the list of a physician who was not prepared to take him. It was reported that in the last three years this person had been included on nearly every physician's list (about 44) in Chester and that the few remaining physicians in Chester who had not given him treatment were not prepared to accept him as a patient. The Allocation Committee is set up

under a scheme that provides that where a patient is unable to secure acceptance by a physician, the committee can assign him to the list of a practitioner of their choice. Fortunately, one of the medical members of the committee was willing to undertake the medical care of this person, but, within a few days of his being assigned to this physician's list, the committee was notified that the patient had moved to another area.

Cause of Itching.—An annotation in the *British Medical Journal* for June 11, 1955, says that, since it was found that a substance indistinguishable from histamine existed in a combined form in human skin, that histamine was liberated when the skin was damaged, and that histamine pricked into the skin caused itching, the view has been widely held that itching of the skin is due to the release of histamine. The view gained support from the observation that antihistamines relieved the itch of urticaria. Two years ago Broadbent published an account of work with cowhage (Mucuna pruriens), sometimes sold as itching powder, and believed at that time to cause itching mechanically. He concluded, however, that cowhage caused a liberation of histamine in the skin, as nettle stings have been shown to do, although it did not contain histamine. He based his conclusion on the observations that extracts of cowhage produced a triple response (like histamine) when injected intradermally, that when cowhage was first extracted the material left behind caused little itching, and that an antihistamine substance given orally reduced the itching caused by cowhage. Subsequently, Bowden and his co-workers showed that a crude extract of the trichomes of cowhage contains 5-hydroxytryptamine. They believe that this substance probably accounts for the pain that occurs when cowhage is applied to the skin, although they could not say whether it was responsible for the itching. More recently Arthur and Shelley claimed that the active principle in cowhage that causes itching is an enzyme called mucunain, and they have described the results of testing a series of enzymes for their power to produce itching. They used the trichomes of cowhage to introduce these enzymes into the skin, after first destroying the mucunain by autoclaving at 250 C for 30 minutes. They then soaked the trichomes in the enzyme solutions, which ranged in strength from 10% downwards. They found that when they introduced a single impregnated trichome into the skin, using a watchmaker's forceps and working under a microscope, a localized itch resulted that was "mild to intense." They tried a wide variety of enzymes finding that only proteinases were active, and of these only the endopeptidases, with activities in the physiological *p*H range. Thus, among the active ones were papain, trypsin, and chymotrypsin, while pepsin and many others were inactive. The three active enzymes were studied as crystalline preparations. They caused itching, with the shortest latent period five seconds and the longest duration 30 minutes. Arthur and Shelley believe that these enzymes cause itching by liberating another substance, but they believe that this is not histamine. Their reason for this is that the active endopeptidases invariably elicited the pure sensation of intense itching without any wheal or flare, whereas histamine and the potent histamine liberator 48/80 never produced itching in the absence of a wheal.

Retrolental Fibroplasia.—A report from the Ministry of Health (*Brit. M. J.* **2**:83, 1955) based on a series of 6,926 infants whose birth weight was not more than 2,000 gm. and who had survived at least two months indicates that 127 of these infants, or 1.8%, had retrolental fibroplasia. There was a marked fall in incidence with increasing birth weight: from 15.3% in infants whose birth weight was under 1,000 gm. to 0.2% in infants with a birth weight between 1,750 and 2,000 gm. All of the infants with retrolental fibroplasia were born in a hospital or were transferred to a hospital within two months. Another report from the Medical Research Council appears in the same issue and is based on a series of 1,095 infants with a birth weight of 1,800 gm. or less, surviving for at least two months and admitted to 17 premature baby units. Of these, 84, or 7.7%, showed evidence of retinopathy; in 39 of these there was a subsequent return to normal fundi. There were 115 babies whose mothers had a history of bleeding during pregnancy, and in this group 17 babies, or 14.8%, were affected with retinopathy. In the 976 whose mothers had no bleeding during pregnancy, there were 67 babies, or 6.9%, with a retinopathy. This difference is statistically significant. Boys were more often affected than girls; the main reason for this appeared to be that they are more immature than girls for a given birth weight. Of the 344 babies who were not given oxygen (mainly the heavier babies), none developed a retinopathy. Of the 581 babies who were given oxygen for less than five days, only 2 were affected (one permanently). There was a steeply rising incidence with increasing length of oxygen administration.

Hospital Survey in Scotland.—The latest survey of regional hospital services published by the Nuffield Foundation concerns the county and city of Perth, which, excluding mental hospitals, controls 1,385 beds, or 10.2 beds per 1,000 population. This is one of the largest groups in Scotland, both in terms of beds and number of hospitals, controlled by one board of management. It provides a wide variety of hospital beds for general practitioners and specialists and is self-supporting, except for facilities for highly specialized branches such as thoracic surgery and neurosurgery, which are organized on a regional and national basis. Of the 1,385 hospital beds in the group, 221 are beds used by patients of general practitioners: 15 beds are for obstetric cases, 108 beds are for general cases, and 98 beds are for geriatric cases. The unclassified beds used by general practitioners are maintained in six cottage hospitals in smaller centers of population.

Euthanasia Again.—Earlier this year the chairman of the South Warwickshire Mental Health Committee, in testifying before the Royal Commission on the law relating to mental illness and mental deficiency, advocated euthanasia in certain cases of gross mental deficiency in children. This evoked a controversy, but, when he spoke on the same subject at the first convention of the National Society for Mentally Handicapped Children recently, his plea was received with applause. Many of the 10,000 members of the society are parents of such children. The chairman believes that there should be a euthanasia panel to which parents of mentally defective children could turn for expert advice on the subject and that the panel, in conjunction with the request of the parents—not the panel alone or the parents alone—should take appropriate action after a decision had been made. He further believes the people of this country do not want to inflict cruelty on anybody; they want to help.

Postgraduate Jubilee.—Hammersmith Hospital, the home of the Postgraduate Medical School of London, is celebrating its 50th anniversary and has been honored by a visit from the Queen. The hospital, at the time it was built, represented a great advance over the Poor Law hospitals and institutions—so much so that the press dubbed it the "paupers paradise." In spite of severe bomb damage the hospital kept going throughout World War II, and in 1945 it underwent great expansion. The number of students enrolled in 1945-1946 was 913, but, by 1953-1954, the number had settled to a more satisfactory level—480. These students are all undergoing residency training or are specialists attending refresher courses. In addition to its other activities, the hospital now houses the Medical Research Council's Radiotherapeutic Research Unit, which includes an 8 million volt linear accelerator and a 45 in. medical cyclotron.

Crash Helmets.—The British Medical Association rejected a motion that the wearing of crash helmets by motorcyclists be made compulsory. Motorcyclists are the major contributors to road accidents, and head injuries account for more than 90% of road fatalities. The act relating to industrial injuries includes a clause exempting miners' and quarrymen's crash helmets from purchase tax but, for some unknown reason, the Treasury has not included helmets for motorcyclists in this category. In 1952, only 2% of motorcyclists wore protective helmets, compared with 30% in 1955. In the 15 months ending March, 1955, of all motorcyclists involved in accidents in London, 18.28% wore crash helmets and in northeastern Scotland 5.17%.

Sterilizing the Intestine.—In the *British Medical Journal* of May 28, 1955, B. J. Fowler reports three deaths following almost complete preoperative sterilization of the feces with antibiotics. Micrococci (staphylococci) are often the only or the predominant organisms subsequently isolated after such a sterilization, and these micrococci are found to be resistant to the drug that has been used in preoperative medication. Although oxytetracycline has often been singled out as the cause of postoperative enterocolitis, this syndrome is no respecter of antibiotics, and Fowler's cases show that the combination of penicillin and streptomycin can be just as dangerous. Fowler believes that the use of intestinal sterilization has gone too far, and he recommends the use of the poorly absorbed sulfonamides. The part played by the Micrococcus in the syndrome is still uncertain. The Micrococcus is not always the cause, and bacteriological investigations are often not done or are done too late. It is likely, however, that where the Micrococcus fills the "bacteriological vacuum" produced by overefficient sterilization of the intestine, the strain that multiplies in the intestine is one that is already drug-resistant when it has reached the victim's alimentary tract. Some lives have been saved by the prompt administration of erythromycin, often the only drug to which these micrococci will respond, but in many patients both specific and general methods of treatment fail, since the condition is acute and fulminating. The liberal use of vitamins may help to prevent this condition, since vitamin deficiency may play a part in its development; however, convincing evidence of this is lacking, and for the present it seems wiser to rely on smaller doses of antibiotics or to return to the use of sulfonamides and energetic measures to eliminate micrococcic infection from surgical wards.

Business Session of British Medical Association.—Physicians attending the annual meeting of the British Medical Association in London passed a motion urging that National Health Service checks be paid monthly rather than quarterly because their own creditors demanded monthly payments. In Newcastle there had been a monthly payment scheme for two years, and the participants were well satisfied. For an individual physician to have to apply for monthly payment was like an admission of hardship before his own colleagues. Dr. A. Talbot Rogers, chairman of the General Medical Services Committee, reminded the meeting that monthly payments would add to the administrative work, the number of employees, and the cost of the service and that any physician could say he wished to be paid monthly without proving hardship.

Family physicians who complained of exclusion from hospital work since the National Health Service started were supported by a hospital consultant, Mr. A. Dickson Wright, who said: "General practitioners who are keen to work in hospitals should have no barriers put in their way. I hate to see this carving up of the profession into two parts by Ministerial edicts."

The meeting decided to press for immediate payment of the compensation promised by the government when the right to sell and buy good will in practices was abolished. The original amount was 185 million dollars; 62 million dollars has already been paid out to retiring physicians and dependents of those who have died. Dr. A. McGlashan, Manchester, pointed out that if he had been able to invest $280 of his compensation in shares, it would now have been worth from $910 to $1,036. Instead, the value of money had dropped and, when paid, the $280 would be worth much less than when the compensation was fixed in 1948.

Mental Defectives.—The Royal Commission on the Law Relating to Mental Illness and Mental Deficiency, sitting in London, heard evidence by the Medical Practitioners' Union, which includes about 4,000 general practitioners, to the effect that instruction of the medical student in the problem of mental deficiency was inadequate. The union said that more time should be devoted in the undergraduate curriculum to practical instruction and field visits. Evidence already presented to the commission by the Ministry of Health and Board of Control, showed that in 1952 the number of mental defectives under care inside and outside of institutions was only 141,607. This figure represents a minority of the mental defectives in Great Britain. One estimate put the total number of mental defectives at 500,000. It follows that over 350,000 are not under official care. Further research and more accurate and comprehensive surveys are needed. The memorandum also stated that it is extremely difficult to institutionalize a mental defective without certification. Many parents object to certification because of the associated life-long stigma. They undertake the care of the child themselves, but complications often arise, especially with boys in early adolescence. Without adequate training the defective then becomes much less manageable. Friction frequently arises between husband and wife, accentuating domestic difficulties. At that stage parents often demand that the child be admitted to an institution. Much trouble can be avoided if treatment in an institution is for the most part voluntary and if there are sufficient places available for admission at an early age.

Boarding Out Older People.—Over three years ago the Exeter Council of Social Service introduced a scheme for boarding out older people. A report on the working of the scheme states that 55 older persons have been boarded out. Of these, 8 have died; 6 have been transferred to welfare homes or hospitals; in 16 the results have been unsuccessful; and 25 have been successfully boarded. So far as practicable, the offers of people willing to accept such boarders into their homes have been carefully checked before recommending an applicant to that home. The final arrangement, though facilitated by the Council of Social Service, has always been between the person and the family with which he is to reside. The offers from prospective adopters in response to newspaper advertisements far exceeds the number of older persons.

Doctor's Mail.—The advertising methods of the pharmaceutical industry has caused irritation and inconvenience to many physicians, most of whom throw postal advertisements into the wastebasket. The advertisements in medical journals provide most of the necessary information and, if a physician requires further information, he may telephone or write to the firm concerned. Some physicians also receive many visits from salesmen, resulting in much waste of time. One constructive suggestion, which has been under consideration by the pharmaceutical industry for some time, is that it would be advantageous to have pharmaceutical advertisements issued in a standard form that could be filed for easy reference. The British Medical Association has taken no official action in this matter.

Ambulance Radiotelephony.—Radiotelephony is being used increasingly by local authorities throughout the country in the control of their ambulance fleets. As there are few points more than 2 miles from an ambulance station in London, the method is not likely to effect much economy. On the other hand, in wartime, civil defense plans would be almost dependent on radiotelephony. As an experiment, therefore, the health committee proposes to equip six ambulances and a staff car for two-way radio transmission, to adapt three more ambulances as reserves, and to establish a control set at headquarters, which would be connected by land lines with a main transmitter on the outskirts of the county.

Royal Society of Medicine.—On June 7 at a banquet to celebrate the 150th anniversary of the founding of the Royal Society of Medicine, the Duke of Edinburgh was admitted as an honorary fellow of the society. In proposing the health of the society the Duke stated his belief that the whole essence of medicine lay in the personal relationship between physician and patient. He was prepared to put up with all the disadvantages and perils of the age—strikes and the threat of the hydrogen bomb—if he could be looked after by "the kind and brilliant men" around him.

Medical Honors.—The members of the medical profession whose names appear in the Queen's Birthday Honors List are: Geoffrey Keynes, consulting surgeon, St. Bartholomew's Hospital, who received a knighthood; Dr. A. R. S. Vickers, the Australian "flying" doctor, who was made a Companion of the Order of St. Michael and St. George; and Dr. Roger Bannister, the Olympic mile runner, who was made a Companion of the Order of the British Empire for services to amateur athletics.

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FRANCE

Psychogenic Origin of Psoriasis.—At a meeting of the Society of Paris Hospitals in March, Bolgert and Soulé reported that 50% of their series of 200 patients with psoriasis had such evidence of psychasthenia as anxiety and emotional instability (confirmed by the Rorschach test). They had had depressive crises without obsessional phenomena. In 16% pure agitation without any depressive syndrome was observed; 30% showed no emotional abnormality. In 48% an intimate chronological relation was established between the appearance of the skin lesions and a specific emotional upset. A study of the background in 15 subjects from 3 to 5 years old revealed two patients with obsession and five with anxiety. Familial conflicts such as serious misunderstanding between the patients' parents always acted as the precipitating causes. In the 84 patients in whom heredity factors could be determined, the basis in 37 proved hereditary. The authors believe that a specific neurocrine secretion acts as a link between psychological trauma and the cutaneous lesion. Certain persons appear to be more prone than others to produce such substances. The authors have observed that a pregnancy that is desired can cure a psoriasis that would otherwise have grown worse. Small doses of such sedatives as atropine and eserine benefit some patients. The best results, however, are obtained with psychotherapy and by obtaining the understanding cooperation of the person responsible for the conflictual situation.

Death of Dr. Leclerc.—Dr. Henri Leclerc, the phytotherapist, died at the age of 85 years. He wrote the "Precis of Phytotherapy" and was the creator and the director of the *Review of Phytotherapy*.

SWEDEN

Treatment of Acute Alcoholism.—Dr. Gustaf Myhrman in *Svenska Läkartidningen* for June 10 advocates admitting persons suffering from acute alcoholism to the medical side of a general hospital on the same footing as persons suffering from any other acute ailment. He treated about 100 such patients in this way in 1944. To qualify for this treatment, the mental state of these patients had to be such that they could share treatment with other patients. This meant the exclusion of noisy and violent alcoholics. This disqualification was remarkably rare, and the most common type of patient was characterized by depression, restlessness, and insomnia. Such patients were treated during the first few days by rest, suitable sedatives, and hypnotics. Preparation of vitamin B were also given, and as a rule the patients improved quickly. After a few days they were encouraged to discuss their problems and to regard alcoholism as a disease rather than as a blameworthy character defect. Disulfiram treatment was started, and its mode of action was explained, facilities being provided for a practical demonstration with alcohol tests devised to convince the patient himself of the reactions provoked. As a rule, these patients could be discharged after about eight days. Myhrman states that the more he has practiced this mode of treatment, the more he has been encouraged to follow it. At first he had found his hospital staff inclined to regard alcoholics only as fitting subjects for police attention and institutes specially devised for them, but this negative attitude soon gave place to keen appreciation of the merits of his policy and wholehearted cooperation from all his subordinates. In his opinion alcoholism has become so widespread in Sweden and of such great social importance that it ranks with tuberculosis, cancer, and rheumatism as a national scourge.

Alcohol Consumption.—G. Nelker in *Svenska Läkartidningen* for June 24 reports on the consumption of alcohol in a representative sample of the population of Sweden. About 60% of the persons between the ages of 19 and 26 years in this survey were personally interviewed. About 2,000 heavy drinkers of the same age were also interviewed, and the Swedish Gallup Institute undertook the interviewing of about 5,000 persons of all ages with regard to their drinking habits. About 7% of the men between the ages of 20 and 25 and 9% of those over this age had a record of contravention of the alcohol laws in the preceding 10 years. This means that about 195,000 men over the age of 15 fell foul of the law, in most cases on account of drunkenness. This was classified as gross in 47,000 men and as less serious in the rest. As there were only about 4,000 women in the same category, there was only one woman convicted of the abuse of alcohol to every 50 men. This striking sex difference is characteristic of a spirits-drinking country, as distinguished from wine and beer-drinking countries in which women are more noticeably affected. About 80% of the men consumed alcohol to a moderate or very slight extent. The rest could be almost equally divided between heavy drinkers and teetotalers. For women it could be said that a third consumed spirits regularly, another third did so occasionally, and the remaining third were teetotalers. The author concludes that the liquor problem is more serious for the youth of today than it was for earlier generations.

Recession of Tuberculosis.—Dr. Enar Brandel, in *Svenska Läkartidningen* for July 1, notes that Norrbotten County in the north of Sweden has had such a bad name in the past with regard to tuberculosis that its dramatic decline since 1944 is the more cheering. In 1944 there were 242 deaths from tuberculosis, or 107 per 100,000 inhabitants; in 1954 there were only 41 such deaths, or 16 per 100,000. Deaths from tuberculosis in patients under the age of 30 fell from 130 in 1944 to 5 in 1954. In 1954 there was only one death from tuberculosis in childhood, while the corresponding figure for 1944 was 14. There has also been a marked fall in the number of patients registered by the Central Tuberculosis Dispensary as suffering from tuberculosis, the numbers for the two years in question being 6,476 and 3,637 respectively. The credit for the improvement must be given to a combination of mass radiography, BCG vaccination, antibiotic and chemotherapeutic remedies, the progress of chest surgery, the raised standard of living, and increased natural resistance to tuberculosis as demonstrated by the more chronic course it now runs.

Rickets.—In *Nordisk medicin* for June 2, Dr. Jan Winberg reports a survey of most of the children's hospitals in Sweden with regard to the number of patients with active rickets treated by them during the period 1944 to 1953. The diagnosis in most of the 2,530 cases thus collected was confirmed by roentgenograms and chemical analyses of the blood. In 1944, 1.55% of the children treated in the hospital suffered from rickets, whereas in 1953 the corresponding figure was down to 0.55. The credit for this improvement must be given to a falling birth rate, to more intensive supervision of children at welfare centers, and to stricter diagnostic criteria. About 65% of these patients were boys. In only 15 patients was the rickets refractory to vitamin D, and in less than 10 patients were clinical signs of vitamin D poisoning observed. In none of these cases did this poisoning have any permanent ill-effects.

SWITZERLAND

Meeting of the International College of Surgeons.—The meeting of the International College of Surgeons in Geneva in May marked the 20th anniversary of the founding of the College in Geneva by Dr. Max Thorek of Chicago. Besides its strictly scientific activities, the college has concerned itself with mutual aid between surgeons. After the terrible bombing that destroyed a part of London, the college helped to rebuild the Royal College of Surgeons. During the floods that devastated the Netherlands, the college aided the surgeons whose offices had been damaged with repairs and new instruments. The college has 12,000 members from 64 countries. A volume of 1,200 pages, with more than 600 illustrations, is available to those who wish to read the papers presented at the meeting. Among the speakers was Prof. G. Domagk of Wuppertal, a winner of the Nobel prize in medicine, who helped to develop the sulfonamides. Switzerland honored Dr. Max Thorek by presenting him with a work of art that will go to the International College of Surgeons Hall of Fame in Chicago.

Meningoencephalitis.—In the *Bulletin of the World Health Organization* (vol. 12, no. 4), it was stated that meningoencephalitis, a virus disease whose importance has only recently been recognized, may be difficult to distinguish from poliomyelitis on either clinical or pathological grounds so that in such cases the correct diagnosis can be made only in the virus laboratory. The clinical, epidemiological, pathogenic, and immunologic aspects were studied by specialists from Slovenia, Austria, and the Netherlands, and the serologic aspects were studied by Pond and Russ of the Army Medical Service Graduate School, Washington, D. C. The increasing importance of virus diseases is considered to be due to the reduced danger from bacterial diseases resulting from effective control, improved diagnostic methods and, for some virus diseases, from a true increase in incidence. The principal vector of meningoencephalitis is a tick, which has been observed in rural and wooded areas and chiefly affects people between 10 and 30 years of age. About 95% of all cases occur from May to September. The course of the disease is generally diphasic; a prodromal stage being observed about 10 days after a person has been bitten. It is influenza-like, but vomiting and a slight stiffness in the neck may also occur. This stage may last from 2 to 5 days, being followed, after a quiescent period of about 10 days, by the meningoencephalitic stage, with high fever, violent headaches, vomiting, loss of consciousness, delirium, and coma. Leukopenia is found in the prodromal stage, and neutrophilic leukocytosis in the meningoencephalitic stage. Another characteristic feature is a progressive increase of protein in the spinal fluid. There is a wide diversity of clinical phenomena in different patients. Even the differentiation from tuberculous meningitis is frequently difficult. An organism was isolated from the blood; the antigen prepared from the brains of mice infected with this organism fixes complement with serums from typical cases of the disease. This organism appears to be a neurotropic virus and to be the causative agent of the disease in Slovenia.

In Austria the epidemiological features were similar, but only one-third of the patients reported tick bites and many others reported only mosquito bites. The incubation period is variable. Abortive cases were observed. Among the 304 patients hospitalized at the Neurological Clinic, Graz, 175 cases were of aparalytic meningeal form, 50 were preparalytic, 27 were spinal paralytic, 20 were bulbospinal or ascending paralytic, 7 were bulbar paralytic, 3 were radiculitic or transmyelitic, and 22 were encephalitic. The case fatality rate was 4.6%. The clinical course was usually diphasic, as in Slovenia, and the changes in the spinal fluid showed a close similarity to those seen in poliomyelitis, but paralysis of the shoulder girdle and upper arm predominated. The postmortem examination showed the findings of acute encephalitis, with changes most marked in the gray matter. Histological findings revealed extensive involvement of the anterior horns of the spinal cord, medulla oblongata, pons, and especially the Purkinje cells of the cerebellum. The possibility of louping-ill virus, Russian spring-summer encephalitis, Czech tick encephalitis, and poliomyelitis must be considered. Differential diagnosis from poliomyelitis rests on serologic and immunologic bases, as clinical and postmortem findings alone are not sufficient. Treatment is symptomatic and supporting.

The pathogenic and immunologic properties of the virus have been investigated by a group in Leyden, Netherlands. Two virus strains were isolated from the central nervous system of two fatal human cases in Austria. Monkeys, mice, and chick embryos proved susceptible. The experimental disease in monkeys was characterized by acute meningoencephalomyelitis, localized particularly in the gray matter of the brain stem, cerebellum, medulla, and anterior horns of the spinal cord. The virus produced discrete lesions on the chorioallantoic membrane of the chick embryo. In monkeys viremia was demonstrated for at least six days before the development of the clinical illness. The virus was shown to be closely related to that of Russian spring-summer encephalitis. Neutralizing and complement-fixing antibodies could be demonstrated in patients' serums. In a further study, also carried out in Leyden, attempts to transmit the disease by the bites of mosquitos engorged on infected animals proved unsuccessful. Pond and Russ studied the reactions of two viruses isolated during the 1953 epidemics in Slovenia and Austria in neutralization tests. They were found to be indistinguishable under the conditions of test from the agents called Russian spring-summer encephalitis virus, Czech encephalitis virus, or louping-ill virus, which are believed at present to be strains of the same agent.

Influenza Epidemic.—According to reports made available to the World Health Organization, the influenza epidemic of the winter 1954-1955 was mild and caused relatively few deaths. It was similar to previous epidemics that seem to have followed each other at intervals of two or three years ever since the epidemic of 1918. Virus B was identified in every outbreak that occurred last winter. Although it is too soon to present a complete picture, some idea of the nature and extent of the last epidemic can be obtained from the following descriptions of outbreaks in various countries.

The first epidemics in the Northern Hemisphere were reported in Wales and the northeast of England in October. In January the incidence increased among adults. The infection spread to most parts of the country and receded in February. Virus B was largely responsible, but a few cases of influenza A were diagnosed in South Wales, the Midlands, and London. Toward the middle of December several cases were reported in Slovenia, but it was not until January that outbreaks were noted in other parts of Yugoslavia. In the last week of February the incidence increased Zagreb, and in the first week of March it also rose in Serbia, particularly in Belgrade. At the beginning of January, Canada reported the beginning of an epidemic involving several hundred cases in the area around Calgary, Alberta. In the last week of the month, the disease abated in this sector, but an outbreak was noted in Ontario. At the beginning of January there was an outbreak in northern Holland. By the middle of February influenza had spread throughout the rest of the country, especially among children. There were a few deaths, attributed to secondary micrococcic pneumonia. In the second half of January there was an increase of nasopharyngitis in West Germany, especially in the Bremen-Hamburg-Lübeck area and mainly among children and young adults. The infection remained mild until the beginning of February. An epidemic also developed in Hesse. The infection was very contagious and affected 30% to 40% of the schoolchildren in town and more than 50% in rural areas. At the end of January, nearly 10% of the adults were also affected. In the first week of February, the epidemic spread to the Rhine area, the region of the Main, Schleswig-Holstein, and Bavaria, where the main focus seemed to be located. In the second half of February, the infection receded in the north, after having affected nearly 15% of the population. During these epidemics the presence of virus B was demonstrated, but virus A was identified in certain cases in the central and northern parts of the country.

In Helsinki, Finland, a focus of influenza appeared in the second half of January, mainly affecting children. In the same period a relatively mild epidemic of influenza was reported in Japan among children of primary schools in Honshu. At the beginning of February, the disease spread to the primary schools of Tokyo and to several other prefectures of Honshu. In the United States, absence among the schoolchildren of Portland and Multnomah County, Oregon, increased from the beginning of February because of an unusual prevalence of respiratory infections. Reports received in mid-February indicated a large number of cases of influenza-like infections in Syracuse, N. Y., and in Maine. In Austria, reports of cases of influenza increased rapidly beginning in the first week in February and began to fall off in the second week of March in most of the country, with the exception of the northeast. In the first week of February, influenza morbidity increased in Norway, Sweden, and Switzerland. These outbreaks reached their maximum during the week ending March 19.

Russia Returns to World Health Organization.—The Soviet Union withdrew from the World Health Organization and became an inactive member about six years ago, as did the other iron curtain countries. On July 8 it was announced in Geneva by a representative of Russia that his government now proposes to take an active part in the work of the World Health Organization, to take up membership in the International Bureau of Education, and to contribute 2 million rubles to the United Nations Children's Fund in the form of services and equipment for maternity and child care.

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CORRESPONDENCE

CORTISONE TREATMENT FOR SARCOIDOSIS

To the Editor:—With regard to the article by Israel, Sones, and Harrell in the Oct. 2, 1954, issue of THE JOURNAL, page 461, entitled "Cortisone Treatment of Sarcoidosis," we agree with most of the statements made by the authors but take exception to two of their major points. We have never claimed, as suggested in the article, that the sarcoid process itself becomes aggravated or spreads because of cortisone. Our experience, like theirs, is that there is either clearing or no change at all in the pulmonary lesions during and immediately after treatment (*Am. J. Med.* **15**:468, 1953. Ibid. **15**:477, 1953). We have not used the term "rebound relapse," and this term has no meaning for us. We have described patients in whom the pulmonary parenchymal infiltration reappeared after clearing with cortisone. This we regard simply as continued activity of the disease process that had been temporarily halted by treatment. We are aware that retreatment will often bring about complete clearing again. The truly untoward effects of therapy described by us are not commented on at all by the authors, and it would appear that a detailed functional study of these patients during and periodically after completion of cortisone therapy was not made. This refers to the occasional worsening of lung function in the form of impairment of diffusing capacity and/or the development of emphysema. It might be added in passing that follow-up studies of these patients to date confirms the presence of these abnormal findings. It is admittedly impossible to state that these changes would not have occurred without cortisone therapy, but the rapidity of their development suggests that there is a cause and effect relationship.

The second point is the development of tuberculosis following cortisone therapy for sarcoidosis. The statement made by the authors that "clearly these cases represented instances of tuberculosis simulating sarcoidosis" cannot be supported. This criticism conceivably could be leveled at our patient in case 5 in whom diffuse pulmonary disease and various other systemic manifestations were present at the start of treatment, but we believe that the large number of bacteriological studies as well as the negative tuberculin tests made this possibility unlikely. In our patients in cases 6 and 7 the evidence of sarcoidosis was unequivocal. After the development of positive cultures for Mycobacterium tuberculosis, the patient in case 6 became bacteriologically negative after chemotherapy was begun and had a long course of chemotherapy. He has continued to be tuberculin positive and has had progressive pulmonary involvement, which we attribute to sarcoidosis, since no bacteriological evidence of tuberculosis appeared up to one year after cessation of antituberculous therapy despite progressive roentgenographic worsening. Our patient in case 7, after the development of positive cultures, was not treated with antituberculous chemotherapy, but, after serial positive cultures for two months (organisms proved virulent for guinea pigs), his gastric washings became negative and have remained so to date. In this patient also, bilateral parenchymal infiltration subsequently appeared, associated with negative tuberculin tests as well as negative cultures—clearly evidence of exacerbation of the sarcoid process without progression of his tuberculosis.

In all three of these patients, because of the rapid development of tuberculosis, we have little doubt that a tuberculous infection had been present previously and that this was brought to clinical attention as a result of cortisone therapy. We do not contend that an entirely new infection occurred and progressed to clinical tuberculosis within as little as one month's time. Our patient in case 8 is in a class by himself, and it is difficult to state precisely what the cortisone therapy accomplished. Evidence of tuberculosis was present prior to cortisone therapy, and we do not contend that cortisone caused it. This case merely emphasizes the clinical difficulty of evaluating the condition of these patients if intensive bacteriological studies are not done. It serves no purpose to say, in retrospect, that patients with clinically typical sarcoidosis actually had tuberculosis simulating sarcoidosis when all the usual criteria for the diagnosis of sarcoidosis have been fulfilled. Even if it be granted that in some patients the syndrome of sarcoidosis may be caused by the tubercle bacillus, the point is that it is often impossible to recognize these cases clinically until cortisone therapy changes the findings into those of frank tuberculosis. All the evidence available in such patients prior to treatment is strongly against the diagnosis of tuberculosis. It would seem, therefore, that in a certain number of cases that look like sarcoidosis evidence of tuberculosis must be expected to develop with cortisone therapy, and we do not have any really effective way of deciding beforehand which cases fall into this group.

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This letter was submitted to Drs. Israel, Sones, and Harrell, who have replied as follows:

To the Editor:—Drs. Lovelock and Stone appear to differ with us significantly only in their beliefs that (1) a large proportion of patients with sarcoidosis have tubercle bacilli lurking in their tissues and (2) that it is frequently impossible to distinguish tuberculosis and sarcoidosis. The difficulty in distinguishing between sarcoidosis and tuberculosis is well recognized. It should be recalled that at one time sarcoidosis was generally regarded as an atypical form of tuberculosis. At present there is almost unanimous agreement that sarcoidosis is nontuberculous in etiology. The rarity with which tubercle bacilli have been found in sarcoidosis (Rostenberg, 1953) has been one of the most persuasive reasons for this conclusion. The fact that most investigators have rarely encountered tuberculosis following corticotropin and cortisone treatment of sarcoidosis (Shulman and others, 1952; Siltzbach and Ehrich, 1954; Carstensen, 1954) has provided additional evidence that in most instances the two diseases can be differentiated.

The unusual experience of Drs. Lovelock and Stone with untreated as well as treated patients may be attributable to their reliance on the Kveim test. They state that in most of their cases "the diagnosis was proven histologically by tissue biopsy or Kveim reaction." The Kveim reaction is not sufficiently well standardized to permit its use as a substitute for biopsy study. We have found the Kveim test frequently positive in tuberculous subjects. Demonstration of epithelioid tubercles does not "prove" the diagnosis of sarcoidosis, for a similar appearance may be observed in tuberculosis, histoplasmosis, and beryllosis. A biopsy is essential to the diagnosis of sarcoidosis, because, in addition to demonstrating compatible tissue changes, it permits bacteriological, mycological, and chemical study of the excised material. If these criteria for the diagnosis of sarcoidosis are strictly adhered to, tuberculosis should rarely supervene. We agree that the indiscriminate use of cortisone in patients with unsubstantiated diagnoses or with minor manifestations is to be deplored. Fear of tuberculosis should not deter the physician from administering this agent in well-studied cases of sarcoidosis, especially those in which there is ocular, myocardial, or progressive pulmonary involvement, where its clinical value seems indisputable.

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ANTIBIOTICS

To the Editor:—In the May 21, 1955, issue of THE JOURNAL, an editorial by Dr. Maxwell Finland on antibiotic-resistant micrococcic infections excellently summarizes the problem. From my short experience in the private practice of pediatrics, I find that it is probably even more a problem outside than inside the hospital because of the inclination to treat infections without sensitivity tests on the organisms. In the vein of Dr. Bean's "Omphalosophy: An Inquiry into the Inner and Outer Significance of the Belly-Button," reviewed with tongue-in-cheek in THE JOURNAL, June 18, 1955, page 616, I have summarized my own feelings.

With penicillin, sulfas, and the "mycins" as our aid,
We've "polished off" all kinds of germs for more than one decade.
To give a drug without a test we thought was rather "foxy"
As every time we knocked them out: Bacilli and the cocci.

And every time there came a germ that showed us some resistance
They found another "mycin" drug to come to our assistance.
But now we've no new "wonder drugs" to add to our collection,
And here we stand, disarmed against the dreaded staph. infection.

Physicians (and the public, too!), a trifle too vainglorious,
Are now quite shocked to find that they can't "shake off" H. Staph. Aureus.
Too tough for all our armaments, they sit around and mock us,
Those indolent and purulent obnoxious clumps of coccus.

Although we talk of "Atom" bombs, I'll worry when they're falling;
Infection with resistant germs to me is more appalling.
And if they do not shortly find some new and potent drugs,
The world won't go to dogs at all, but right back to the "bugs!"

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CHLOROPHYLL DEODORIZATION

To the Editor:—In the April 9, 1955, issue of THE JOURNAL, page 1279, "Chlorophyll Solution in Deodorization of Advanced Carcinoma of Head and Neck," deserves special comment. The survey emanates from a cancer research center of good repute. The findings, I am sure, are accurate and sincere. It is unfortunate that the findings and conclusions are based on a liquid solution applied in the oral cavity. At best, this type of therapy would be unsatisfactory in such an area. The wasted material and its intimate contact with salivary secretion would nullify its efficacy. In other locations of the body, were the same preparation applied, it could have been controlled far more accurately. This would also hold for the application of chlorophyll ointment. These statements are borne out by the findings of the Therapeutic Trials Committee of the American Medical Association (*J. A. M. A.* **140:**1336 [Aug. 27] 1949). The results have been corroborated by many independent workers. My personal experience with chlorophyll was limited principally to the use of chlorophyll tablets given internally. The product used was Chloresium. I have described the results elsewhere (*West. J. Surg.* **60:**363 [July] 1952). Since that time, I have taken a special interest in this preparation. The results have been satisfactory for body odors, foul-smelling wounds, infected sinuses, colostomies, and other malodorous conditions. In fairness to the authors, might I suggest the use of the chlorophyll tablet internally to reduce the malodor produced by the condition generally. As for the local lesions, it would be impossible to eliminate the odor from morbid or necrotic tissue by any means, least of all with a solution that simply bathes the surface. Here I believe the best therapy would be actual surgical excision or medicinal agents now available on the market for the elimination of this necrotic material.

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ELKS SCHOLARSHIPS

To the Editor:—The Elks National Foundation, of which I am a trustee, is a large trust fund held in perpetuity with no overhead expense. The entire expense is paid by the Grand Lodge, and all income is used for humanitarian purposes. Over the years we have given many college scholarships, and at the last meeting in Philadelphia the Elks National Foundation gave 56 college scholarships. The winner of the first place in the girl's division was Kathleen Joanne Kampmann, Naches, Wash. The top award in the young men's department went to Robert Allen Evans, El Dorado, Kan. Robert will enter Yale University New Haven, Conn., as a premedical student next fall. Kathleen is a premedical student at the University of Washington, Seattle. I am happy that the two top winners this year are prospective doctors. In addition to many contributions and its humanitarian activities, the Elks National Foundation has become interested in cerebral palsy, and I presume that 300 or 400 scholarships in cerebral palsy have been granted by this foundation in the last two or three years. I am not interested in advertising the Elks, but I am interested in the voluntary way of doing things. Several of our most valuable students are now doctors of medicine. This year's top winners received high grades in competition with hundreds of others, and I believe that both of them had grades in the neighborhood of 99%. They were chosen from nearly 5,000 youngsters from every state and territory of the United States. The applications are judged on a basis of 60% for scholarship and 40% for character and citizenship in school and community.

Top students receive Elks National Foundation scholarships. *Left to right:* Robert Allen Evans, El Dorado, Kan.; Dr. McCormick; and Kathleen Joanne Kampmann, Naches, Wash.

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BOOKS FOR KOREA

To the Editor:—I read with interest the letter in the July 16, 1955, issue of THE JOURNAL from our chairman, Dr. Howard A. Rusk, on "Books for Korea." Due to the excellent cooperation of the physicians, hospitals, medical schools, and medical societies of the United States, this has been an extremely successful and important venture. I regret that the address to which future contributions of books should be shipped was incorrect. It should read: Medical Section, Sharpe General Depot, Tracy Annex, Lathrop, Calif. Shipments should be marked "KORMEDED."

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THE LEISURE CORNER

PICNICKERY—A SCIENCE

With warm weather upon us, the thoughts of many doctors the country over tend to wander off in the general direction of the great outdoors. To some, warm days bring to mind a favorite mountain trout stream and the monster that got away. To others, they are a reminder of thrilling tennis games won—and lost. But to many more, the warm weather brings thoughts of carefree hours spent in the country doing nothing or, more precisely, picnicking.

Actually, picnicking is not just doing nothing. Not too long ago, it took the foresight and forethought of a master strategist to plan a really successful picnic. Today, thanks to a number of modern gadgets and conveniences, this is no longer so. Picnicking has been transformed from a highly difficult maneuver into what has been called "the simple science of picnickery." Webster's dictionary has this to say in the way of a definition for the word picnic: "A pleasure party, the food for which is usually provided by members of the group and is eaten in the open air."

Because people enjoy picnics in different ways, a more precise definition would be misleading. To some, an enjoyable picnic requires little more than those two basic ingredients, food and fresh air. To others, such an outing may appear dull and incomplete unless combined with other pastimes, ranging from competitive games to boating at a nearby lake. A master at picnickery—a word, incidentally, that lexicographers have grossly overlooked—fashions an outing to fit everyone's taste.

If there are children in the group, one should make a point of bringing along a rubber ball, preferably one of rather light weight and not overly small in size. With the aid of this simple toy and a little imagination, one can devise any number of exciting games for the youngsters. An example is modified baseball, where the fist serves as a bat. The chance of injury to any of the participants in such games is practically nil. The less agile members of the party, meanwhile, could be playing cards—a particularly versatile picnic pastime. Other sedentary games that have proved popular at picnics include scrabble, charades, and word games. Fishing, generally speaking, makes a poor time-filler at picnics—primarily because it so often takes up too much time. A few nibbles on one's line can make a picnicker forget all about food and his companions and stay glued to one spot grimly determined to "get that fish." So, unless one is planning to fish primarily and picnic secondarily, rod and reel should be left at home beyond temptation's reach.

Picnic sites are many and varied. Careful planning can make an outing in one's back yard a delightful experience. The usual picnic site, however, is a spot far removed from home—the sea shore, perhaps, or a park. Probably the greatest convenience of the present-day picnicker is his automobile. It makes sure he gets there, providing, of course, he in turn has made certain it was in good working order before starting out. After one gets there, however, he may soon be wishing for the peace and convenience of the city unless he is aware of a few basic facts and has bothered to invest in a few rather essential items. In the basic facts department is the business of selecting a good picnic site. To start with, one should never pick a spot because it is beautiful and has a grand view and forget about everything else. Low-lying, damp areas, for instance, should be avoided no matter how pleasant they may appear. For, with the coming of evening, such spots are frequently invaded by armies of mosquitoes and other insects that waste little time making a picnic out of picnickers. While on the subject of insects, it should be remembered that ants, too, enjoy picnics. So, before settling down, one should make sure the spot is nowhere near an ant colony.

Even a doctor may forget to bring a first-aid kit, which, needless to say, could be a big mistake. For cuts, bruises, and insect bites are frequent occurrences on such outings, particularly if there are children in the party. Children, naturally, have the grandest time of all. To make sure that they play safely, one should see if there are any bodies of water, deep holes, or similar hazards in the vicinity. Also, children should be taught as soon as possible to recognize dangerous weeds such as poison oak and ivy.

Next, and usually the key to a picnic's success or failure, is the matter of food. While this is normally thought to be totally in the women's department, assistance of an indirect nature would be both fruitful and welcome. This contribution should not come in the form of cooking tips shouted from the living room to the kitchen but in the form of a few reliable implements bought especially for this picnic and picnics to come. These implements are designed to keep cold foods and drinks cold, warm ones warm, and get uncooked food cooked.

Nothing is as tasteless, for instance, as a potato salad or a bottle of soda that has been in the sun without adequate protection. To guard against this picnic hazard there are portable insulated picnic containers. In selecting one, special attention should be given to weight. Every extra ounce feels more like a ton after a long hike, so that containers made of heavy metal would add needless strain to an outing. Lightness plus smart design—an important feature from the wife's standpoint—are incorporated in some picnic containers. The Skotch Kooler, for instance, is an insulated container in smart plaid that has a four gallon capacity and can keep foods and drinks hot or cold for many hours.

Incidentally, the problems entailed by using ice—its weight, bulk, and general sloppiness—can be avoided by utilizing a newly developed dry cold refrigerant that comes in cans. The cans contain a chemical substance that freezes quickly when placed in the refrigerator's freezing compartment. A six ounce can has the cooling equivalent of nine ice cubes and can be used over and over. It should be remembered that insulated picnic containers are also useful as a means of keeping foods warm. If that is the purpose, one can make doubly sure that a casserole dish, for instance, stays warm by heating a brick in the oven, wrapping it in tinfoil, and placing it underneath the dish. A cool drink of the homemade variety is always welcome at a picnic. To make sure it stays chilled, there are insulated jugs of considerable capacity.

If a cookout is planned, no special equipment other than wood or charcoal may be necessary. Many state parks and recreation areas have grills for the use of picnickers; however, many areas do not. The safest thing to do, unless one knows for certain whether such facilities exist, is to bring along a portable charcoal grill. A word of caution to those doctors who remember the open campfires used in their camping days—many states expressly prohibit starting open fires for cooking or other purposes, except in certain designated areas. Other states require a special permit. So, no matter how good a woodsman one is, a charcoal grill could come in handy.

Some of the newer grills make starting a fire a foolproof operation by incorporating a cleverly engineered draft system. This insures against another picnic dampener; for many a temper has been lost and a box of matches used up in fruitless attempts to get a fire started. Failure in this department could be due to lack of dry kindling or the fact that too much wood or coal has been dumped on the kindling at one time. An added bit of insurance here would be to take along a can of flammable liquid specially prepared for such contingencies. This last mistake, smothering a fire with too much fuel, is one that amateur chefs never cease to make. With the average grill, for instance, about 12 briquettes should be placed on paper, not more. Once the fire is well started, another six balls should be added. This is enough to cook for a dozen people, so that continuing to add coal would be both a waste and a mistake. After the dinner is cooked and done comes the important job of putting out the fire. Countless forest fires have been started by campers who carelessly left a few not totally extinguished coals behind.

Many, many more facts could be noted about this science called picnickery. Most are common sense rules, others of the kind that one never really learns without practice. Fortunately, the mistakes that are usually made by beginners are of the type that leave no scars. And mistakes or none, few pastimes bring more pleasure to more people. Perhaps all that really needs to be learned about picnickery has been summed up by the Boy Scout organization in two simple words: "Be Prepared."

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Experience with Phenylindanedione in the Management of Acute Myocardial Infarction. G. M. Breneman and E. M. Priest. Am. Heart J. **50:**129-135 (July) 1955 [St. Louis].

The authors list the properties desired in an ideal anticoagulant drug and report that Soulier and Gueguen in France have used 2-phenyl-1,3-indanedione as an anticoagulant since 1947. The drug has a coumarin-like action but is not a coumarin derivative. It is reported to have rapid onset of action, wide range of therapeutic safety, and few toxic reactions. This drug has been used at the Henry Ford Hospital as the routine oral anticoagulant since June, 1953. The authors report their experience in 251 consecutive cases of proved myocardial infarction to whom the drug had been administered for a minimum of 48 hours. These cases were unselected except that those patients in whom any type of oral anticoagulant was contraindicated and all those receiving the drug for less than 48 hours were excluded. The initial dose was 300 to 500 mg. given in divided doses in the first 24 hours. Subsequent dosage usually varied from 100 to 200 mg. daily, also given in divided doses. An occasional patient required smaller or larger daily amounts to maintain the desired hypoprothrombinemia. The over-all recovery rate was 90%. Thromboembolic complications occurred in 3.5%, and hemorrhagic complications in 1.6% of the patients. Two skin eruptions were observed that required the immediate discontinuation of the drug therapy. A number of favorable reports have appeared about this drug, and the authors feel that their experience confirms its value in the management of acute myocardial infarction. They regard it as the best currently available oral anticoagulant.

Pharmacological Combination of Corticotropin, Ascorbic Acid, and Adenosine Triphosphoric Acid in Crises of Bronchial Asthma. L. Rosa and G. Bergami. Minerva med. **46:**936-941 (April 7) 1955 (In Italian) [Turin, Italy].

Actavis, a combination of 4 I. U. of corticotropin (ACTH), 20 mg. of adenosine triphosphoric acid (ATP), and 1 gm. of ascorbic acid, was given to 20 patients several days after they were admitted to the medical clinic of the University of Bologna with severe status asthmaticus. The drug was given slowly by intravenous injection. The initial dose of one-half vial on the first day was increased to one to three vials daily and then tapered off when improvement was observed. Tolerance to the drug was good except in two patients in whom a burning sensation, nausea, dizziness, and headache necessitated discontinuance of the therapy. Excellent or good results were obtained in 16 patients in whom the status asthmaticus was interrupted. The condition remained unchanged in the other four patients, despite the fact that they received three vials of the preparation daily. Thirty days after completion of the treatment, a relapse was observed in four patients, in one of whom it was severe. These encouraging results indicate a probable synergy between the various components of Actavis.

The place of publication of the periodicals appears in brackets preceding each abstract.

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Thrombosis of the Abdominal Aorta: A New Physical Sign. G. W. Covey. Nebraska M. J. **40:**205-210 (June) 1955 [Lincoln, Neb.].

Many of the recent reports dealing with occlusive disease of the abdominal aorta stress the so-called insidious, slowly progressive, chronic thrombosis involving the aortoiliac segment in contrast to acute thrombosis or to embolic occlusion of the aorta and other arteries in this region. The histories of four men, ranging in age from 47 to 60 years, show that one had a more acute type and three had typical insidious chronic thrombosis. Intermittent claudication is the cardinal symptom. When the terminal aorta and iliac arteries are involved, this symptom is not, however, the intermittent limp due to pain in the calf of the leg or foot. It is an aching sensation just short of pain and related in quality to the sensation of fatigue. Moreover, it is typically located in the region of the hips and low back, and has been referred to as the "hip-type" of claudication. Gangrene rarely occurs in cases with chronic insidious occlusion, as contrasted with the acute, sudden vascular closure in which it is common. In three of the cases a loud systolic murmur was heard over the aorta, above the umbilicus, and over one or both the common iliac arteries. Such a murmur occurs in other conditions, especially in aneurysm of the abdominal aorta, but there is an uncommon element in this particular murmur; it may be heard over the spinous processes of the lumbar vertebrae. Here it is even louder and more musical in character than it is over the anterior aspect of the abdomen. It is loudest over the vertebrae when the patient lies in a prone position. This murmur was first heard by the author in the third case and also in the fourth case. He watched for this murmur in many other conditions, but failed to find it. He feels that it may prove a useful sign in the differential diagnosis of chronic, insidious occlusion of the terminal aorta, or in occlusion of the iliac vessels. It probably occurs only when the aorta itself is involved in the thrombotic process or when both common iliac arteries are occluded. Although Leriche stated that loss of penile erection is one of the two cardinal symptoms, none of the patients presented here complained of impotence, and of the two questioned about this symptom neither admitted it. Only one of the three patients having chronic, insidious thrombosis was subjected to aortography. This procedure served only to confirm the clinical diagnosis. The clinical diagnoses were made on the basis of the "hip-type" of claudication combined with the absence of vascular pulsations. The peculiar musical murmur over the lumbar spine is the new sign. Since this report was written, four additional patients have been observed in whom occlusion of one or the other common iliac artery was present. One of the four had impotentia erigendi. None exhibited the lumbar musical systolic murmur. This tends to confirm the theory that involvement of both iliac arteries or of the terminal aorta is needed to engender this murmur. A long and active life is the probable outlook for many patients who have the chronic, insidious type of aortoiliac thrombosis. Occlusion of the renal arteries by cephalad extension is the greatest danger. Medical management has been used in the three cases of chronic insidious thrombosis herein reported. Two patients believe they can walk farther before developing pain after Priscoline or other similar drugs have been taken for several months. Accurate evaluation of drug therapy, however, is difficult. Surgical therapy varies. Lumbar sympathectomy, unilateral or bilateral, has been used alone or combined with ligation and removal of the thrombosed segments of the various arteries. Thromboendartectomy has been performed, at times combined with a support made from fascia lata to reinforce the weakened arterial wall. The latest procedure, and perhaps the most logical, is excision of the involved artery and replacement by an arterial graft.

Rehabilitation of the Patient with Chronic Rheumatoid Arthritis: Two-Year Study. E. W. Lohman. J. Chronic Dis. **1**:628-637 (June) 1955 [St. Louis].

Rheumatoid arthritis is a progressively crippling disease of unknown origin for which there is no known cure. The fact that severe crippling and invalidism ultimately appear in from 10 to 15% of the patients with this condition makes the problem of their rehabilitation socially and economically important. Rehabilitation was formerly considered applicable chiefly to patients with a "burned-out" disease process. The advent of the adrenal and pituitary hormones for the better control of the inflammatory process of rheumatoid arthritis, however, suggested the possibility that a combined medical and rehabilitation program might be used to advantage in patients with active disease. The favorable impressions obtained from work with a pilot group of severely crippled patients who were hospitalized and treated with a combination of cortisone and rehabilitation measures led to the establishment of a full-scale research project in December, 1951, at the Goldwater Memorial Hospital. The various types of special treatment needed included physical therapy, occupational therapy, remedial exercises, psychotherapy, psychological testing, vocational counseling, and assistance from social workers. Patients admitted during the first year of the study (group 1) had to meet the following criteria: 1. They had to be within the 21 to 55 year age group, with severe functional impairment but without any obvious need for corrective orthopedic procedures. 2. The rheumatoid process had to be active and progressive. 3. There could be no medical contraindications for hormone therapy. Less rigid criteria were adopted in the second year in order to obtain a group for comparison with the first, but the group 2 patients still had to have active and progressive rheumatoid arthritis, to be free from problems requiring primarily orthopedic correction, and to be incapacitated for gainful employment. Patients in group 1 had an average age of 46 years, with a disease duration of 13 years. Those in group 2 averaged 40 years in age and had a disease duration of 7 years. All were evaluated medically, functionally, and psychosocially before treatment was begun. Cortisone or hydrocortisone in oral doses was the drug used in most cases. Physical rehabilitation measures were started as soon as the maintenance dosages of the drug were established, and the patients were then continued on both drug and rehabilitation measures. They were scored on their proficiency in the activities of daily living before treatment began, after the establishment of maintenance drug therapy, and repeatedly thereafter. Evaluation of the results at the end of the first two year period showed that 14 of the 18 patients in group 1 and all 20 of those in group 2 had been discharged from the hospital. Only four group 1 patients still required custodial hospital care and even in these there had been a 20% increase in function. Functional improvement in the other group 1 patients ranged from 26% to 39% in the case of those who were totally self-sufficient on discharge. One of the totally self-sufficient group 1 patients was placed in a job. Full-time jobs were also found for 7 of the group 2 patients, 15 of whom were totally self-sufficient. Several of the patients not placed in jobs are now working at home. These results show that patients with rheumatoid arthritis can often be saved from invalidism by a broad program of rehabilitation.

Chemotherapy of Tsutsugamushi-Disease. S. Katsura. Acta med. et biol. **2**:725-753 (Dec.) 1954 (In English) [Niigata, Japan].

The rickettsiosis known as tsutsugamushi disease was formerly treated by symptomatic measures, but the introduction of *p*-aminobenzoic acid, of chloramphenicol and of various antibiotics has decidedly changed the therapy of this disease. The author and a number of other Japanese investigators have demonstrated that tsutsugamushi disease can be cured by these drugs. In four patients treated with *p*-aminobenzoic acid medication was started between the second and eighth days of illness. Fever began to subside from three to five days after onset of treatment and disappeared in from seven to eight days; treatment was continued for about two days after subsidence of fever. No relapse occurred in these patients. Of 31 patients with tsutsugamushi disease, 7 were treated with chloramphenicol, 16 with chlortetracycline, and 8 with oxytetracycline. During treatment with these drugs the elevated temperature subsided as a rule within two and a half days. Although these drugs were effective in smaller doses and in a much shorter time, relapses occurred in a number of patients. The author also studied the in vitro rickettsicidal action of chlortetracycline, oxytetracycline, chloramphenicol, erythromycin, magnamycin, *p*-aminobenzoic acid, and several other drugs. In addition, he studied the effects of these drugs in mice that had been inoculated with Rickettsia tsutsugamushi. Factors influencing cure and relapse of tsutsugamushi disease were likewise investigated. The author feels that these and other studies have clarified to some extent the mode of action of the aforementioned drugs in tsutsugamushi disease. Many investigators have recognized that in rickettsial diseases these drugs, particularly the antibiotics, do not destroy the Rickettsia but inhibit growth. In his studies on tsutsugamushi disease the author confirmed that in addition to the direct inhibitory effect on R. tsutsugamushi, an activating influence is exerted, which gives vitality to the cells of the body and enables them to counteract the effects of the rickettsias. He also found that if antibiotics are to be used from the onset of the disease, it is not advisable to give them in such large doses as to rapidly counteract the increase in temperature; on the contrary, it is better, both for formation of immunity and consequently prevention of relapse and for economy of materials, to reduce fever slowly by administering small doses over a longer period.

Infectious Mononucleosis: Statistical Study of 77 Cases. R. Savosnick. Tidsskr. norske lægefor. **75**:311-312 (May 1) 1955 (In Norwegian) [Oslo, Norway].

A seeming definite increase in the frequency of infectious mononucleosis during recent years is ascribed in part to greater attention to the general character of the disease and more frequent systematic examination of the blood, leading to correct diagnosis. In the five year period ending in 1952, 77 patients with infectious mononucleosis (44 males and 33 females) were treated in the epidemic department of Central Hospital in Trondheim. The disease rarely occurs in persons over age 30; most of the patients were between 16 and 20. Two-fifths of the patients were admitted with a diagnosis of diphtheria, one-fourth with a diagnosis of angina, and only one-tenth with the right diagnosis. While hepatic affection is believed to be present in most cases of infectious mononucleosis, liver damage is seldom so grave that the patient becomes icteric. There was visible jaundice in only two of these cases. The dominating introductory symptoms are sore throat, fever, and "influenza symptoms." In over half the cases more than 70% mononuclear cells were found, but it is the pathological lymphocytes that are pathognomonic for infectious mononucleosis and on which the diagnosis is based. Paul-Bunnel's reaction was positive in 19 out of 29 cases. Eighteen of the patients were treated with sulfonamides, 19 with penicillin, and the last 40 with Aureomycin. In all three groups the average duration of illness was between 10 and 13 days.

Treatment of Severe Hypertension with Methonium Compounds. V. Rønnov-Jessen. Ugesk. læger **117**:549-558 (May 5) 1955 (In Danish) [Copenhagen, Denmark].

Methonium compounds were administered to 96 patients with severe hypertension and severe hypertensive disturbances. Nine patients died during the treatment, seven after treatment ended, from cerebral hemorrhage, heart failure, cardiac infarct, or renal insufficiency. The contraindications were uremia, recent cerebral or cardiac thrombosis, or psychic reduction that prevented the necessary cooperation. In judging the effect, the 84 patients treated for from 5 to 49 months were considered. In 16 cases the treatment was supplemented with reserpine. In each case treated the purpose was to find the dosage suitable to produce the greatest reduction of blood pressure and subjective disturbances with so few side-effects that there would be no temptation to give up the treatment. In many cases the patients became practically free from symptoms, and the majority improved subjectively. There were also objective improvements in a number of cases. Evaluation of the prognosis was not possible. In some

cases the treatment prolonged life. The ideal hypertensive agent combines strong uniform effect with easy administration and few side-effects. Reserpine now most nearly meets the requirements, but the hypertensive action is often moderate and, particularly in severe hypertension, considerably weaker than that of the ganglion-blocking agents. These should at present be reserved for severe cases of hypertension that cannot be satisfactorily treated with reserpine. Severe hypertension with acute encephalopathy, symptoms of heart failure, or rapidly deteriorating renal function should be treated primarily with ganglion-blocking substances. Careful instruction of the patients is necessary for reasonable safety in the application of these drugs.

Combination Treatment of Hypertension with Pentapyrrolidin and Reserpine. I. Persson. Ugesk. læger **117:**568-571 (May 5) 1955 (In Danish) [Copenhagen, Denmark].

Because of the severity of the hypertension in 16 cases investigated, a powerfully active hypotensive substance had to be applied at the start of treatment. After pentapyrrolidin treatment was given for up to 10 months in eight of the cases and after pentapyrrolidin was given in as large doses as possible for two weeks in the remaining eight cases, 0.1 mg. of reserpine three times daily was administered in all cases and the dosage was slowly increased to 0.25 mg. twice daily, with simultaneous reduction of the pentapyrrolidin dosage. On the combination treatment of reserpine and pentapyrrolidin the subjective symptoms disappeared and the blood pressure dropped considerably, in most cases to normal values. The reserpine allowed reduction of the pentapyrrolidin dosage, and the possibility of side-effects, especially constipation, was lessened. There are practically no contraindications for reserpine, and the contraindications for the combined treatment are those for pentapyrrolidin. Caution is urged in cases with marked reduction of renal function. Recent thrombotic processes in brain and heart are considered contraindications. Coarctation of aorta, aortic insufficiency, pheochromocytoma, glaucoma, organic pyloric stenosis, and tendency to ileus contraindicate the combination treatment. The results of long-term treatment with these substances are not yet known.

Treatment of Hypertension with Reserpine (Serpasil): Preliminary Report. T. Hilden, A. R. Krogsgaard and E. Godtfredsen. Ugesk. læger **117:**572-575 (May 5) 1955 (In Danish) [Copenhagen, Denmark].

In 6 out of 38 cases of essential hypertension, treatment with reserpine could not be completed because of side-effects or lack of effect and cooperation. Satisfactory results were achieved in 16 cases after an average of six months' treatment. In the remaining 16 cases reserpine treatment was supplemented with hydralyzine (Apresoline). The reserpine dosage was individualized. Except in some cases, where up to 3 mg. daily was given for a short time, the highest daily dosage was 2 mg. On continued treatment the dosage was from 0.5 to 1.5 mg. daily, apportioned in four doses. The mean blood pressure fell an average of 27 mm. Hg. In five cases retinal changes regressed, and in two cases the electrocardiographic changes improved. In most cases improvement occurred in the subjective symptoms. Side-effects were generally slight. In some cases depression was seen, which in two cases necessitated termination of the treatment in spite of otherwise favorable results. On the basis of their results together with reports from the literature the authors conclude that reserpine can give satisfactory results, first and foremost in milder cases of hypertension. In other cases, especially more severe ones, the effect will often prove inadequate; here, combinations of reserpine with other hypotensive agents can be important.

Fatal Hexamethonium Intoxication. V. Rønnov-Jessen. Ugesk. læger **117:**584-587 (May 5) 1955 (In Danish) [Copenhagen, Denmark].

The case reported illustrates the possible danger connected with peroral hexamethonium treatment. In a woman, aged 68, with arterial hypertension, symptoms of shock with paralytic ileus and considerable uremia set in after five days' treatment with 250 mg. hexamethonium bromide five times daily. Death ensued in spite of fluid therapy, blood transfusion, and administration of nor-epinephrine. Necropsy showed dilatation of stomach and small intestine and localized gangrene in the distal part of ileum and bladder, presumably secondary to thrombus formation in the vessels. The moderate hexamethonium bromide dosage would not in most cases have affected the blood pressure significantly. Patients with severe hypertension should be hospitalized. Treatment with ganglion-blocking agents should be begun in the hospital to allow close observation of the patient during the introductory phase and timely treatment if needed. If ganglion-blocking substances are to be used in the practice, the introductory dose should never exceed 125 mg. of hexamethonium bromide or 20 mg. of pentapyrrolidin bitartrate, and the dose should be increased slowly. The smallest dose that will give subjective relief must be found. Careful instruction of the patient is the absolute rule.

Mechanism and Pharmacological Blockade of Dumping Syndrome: Preliminary Report. A. Dyk. Wien. med. Wchnschr. **105:**487-489 (June 18) 1955 (In German) [Vienna, Austria].

Dyk's observations on persons who had not undergone gastrectomy and to whom dextrose was administered by the intrajejunal route, in some of them after normal ingestion of food, suggest that the dumping syndrome may be elicited selectively by enteral administration of dextrose. The occurrence of the syndrome seems to depend on a disturbance of absorption, possibly in the sense of phosphorylation or dephosphorylation in the intestine and in the intestinal wall respectively. An elucidation of the actual pathogenesis of the dumping syndrome and a properly directed therapy may be expected from a closer clarification of these disturbances and their relationship to the functional hypophysial-adrenal system and, in a wider sense, to the entire autonomic nervous system. The vegetative mechanism on which the course of the syndrome is based is one of a sympatheticotonic state, which by a dumping process changes into a vagotonic state in a kaleidoscope-like fashion. Blocking of the syndrome can be effected with the aid of phenyl-ethyl-methyl-hydantoin given in doses of 0.1 gm. approximately one hour before the meal, and that probably by producing a primary vagotonic starting position. Thus a simple and reliable drug is available to give symptomatic relief to the patient with the dumping syndrome.

Acute Micrococcic (Staphylococcic) Enterocolitis as a Serious Complication of Antibiotic Therapy. P. Rentchnick. Deutsche med. Wchnschr. **80:**892-895 (June 10) 1955 (In German) [Stuttgart, Germany].

Profuse diarrhea, which occasionally was accompanied by shock or even resulted in death, occurred in some patients who were given antibiotics to achieve sterilization of the colon preparatory to a surgical intervention, or to treat pneumonia or an infection of the urinary tract. Morphological and bacteriological studies revealed that this complication can be traced to an acute micrococcic (staphylococcic) enterocolitis, which is a superinfection leading to intoxication of the organism, particularly the nervous system, with an enterotoxin. About 12 patients with this secondary micrococcic enterocolitis were observed at the Canton Hospital in Geneva during the past year. The disorder usually begins between the third and fifth day after onset of treatment with antibiotics, but sometimes earlier or later. The first symptom is usually a profuse diarrhea, which is accompanied by temperature elevation up to 40 C (104 F). Dehydration and loss of electrolytes rapidly result from the severe diarrhea, and signs of shock such as falling blood pressure, cold extremities, anxiety, oliguria, and retention of urea are evident. Although the clinical picture suggests toxemia or septicemia the blood culture is nearly always negative. It is important to recognize the first signs of this disorder, and in order to do this the intestinal function of patients being treated with antibiotics should be watched carefully. While a mild diarrhea and the fact that the stool loses its odor do not necessarily demand the instantaneous interruption of the antibiotic therapy, the stool should at once be subjected to bacteriological analysis, and if Micrococcus aureus is found in profusion, antibiotic therapy

should be stopped and steps should be taken to treat the superinfection, restore the electrolyte balance, and counteract the shock. Erythromycin has proved to be the drug of choice for the treatment of resistant strains of micrococci.

Scleroderma: Clinical and Anatomic Study of 28 Cases. A. González Salvatierra. Rev. méd. Chile **53:**162-180 (March) 1955 (In Spanish) [Santiago, Chile].

Twenty-eight patients with diffuse scleroderma were observed in a hospital of Chile for the last nine years. There were 26 women and 2 men. The disease appeared in most of the patients in their middle age and progressed for several years. Symptoms in order of frequency were Raynaud's syndrome, arthralgia, pigmentation alone or with vitiligo, rigidity and hardness of the skin, and progressive deterioration of the general state of health. Edema, paresthesia, and cardiac insufficiency each were present in a patient. Two or more symptoms appeared simultaneously, in some cases as early as 7 or 20 years prior to the full clinical picture. Visceral involvement occurred before, together with, or after appearance of skin manifestations, without any relation to the acuteness or extension of the skin lesion. It manifested itself suddenly and unexpectedly by the occurrence of insufficiency of the involved organ. The heart, bronchi, lungs, and kidneys were the most frequently involved organs. Other organs and tissues were involved with less frequency but with the same degree of severity. There is no curative therapy for either the skin or the visceral disease, but the visceral lesion is more acute than the skin lesion. The most acute visceral involvement was that of sclerodermal nephropathy. It developed suddenly with hypertension, renal insufficiency, oliguria, progressive uremia, and a rapid acute course with fatal termination about a month after appearance of the hypertension. In the author's cases visceral involvement occurred in 14 patients (50%). Cardiopathy occurred in four patients, bronchopneumonic involvement in four, esophageal scleroderma in four, and nephropathy in two. These cases are reported in detail, with roentgen pictures and microphotographs. Four patients died from bronchopneumonia or from nephropathy. Three autopsies were performed. The pathological examination in bronchopneumonic involvement showed diffuse bronchial and pulmonary fibrosis with infiltration, bronchiectasis, alveolar infiltration, a stage of acute bronchopneumonia, and intense fibrosis of the arteries and arterioles with thickening of the intima. The pathological picture of sclerodermal nephropathy consisted of cortical necrosis with external zones of hemorrhage or infarct, endoarteritis, fibrinoid necrosis of blood vessels, and necrosis of the glomeruli, tubuli, and interstitial tissue. The medulla of the kidney was normal.

The Treatment of Pulmonary Tuberculosis with Iproniazid (1-Isonicotinyl-2-Isopropyl Hydrazine) and Isoniazid (Isonicotinyl Hydrazine). C. M. Ogilvie. Quart. J. Med. **24:**175-189 (April) 1955 [London, England].

After the antituberculous properties of hydrazine derivatives of isonicotinic acid had been reported during the early part of 1952, isoniazid was released for general use and was universally accepted as an effective antituberculous agent. The isopropyl derivative (iproniazid) was made available for clinical trials only in certain centers. The author summarizes the known differences between iproniazid and isoniazid and confirms that higher plasma levels can be obtained with iproniazid in man. Iproniazid proved ineffective against tuberculous infections resistant to isoniazid but effective against sensitive infections. The emergence of resistant strains was noted in a high proportion of patients treated with iproniazid alone. Two comparable groups of patients with pulmonary tuberculosis (mainly recent disease, or a recent spread of chronic disease) were treated for two to four months with iproniazid and isoniazid, respectively, each drug being combined with streptomycin. Average gains of weight and the incidence of toxic effects were considerably greater in the group treated with iproniazid. Progress, as judged by temperature response, the closure of large cavities, and the incidence of bacteriological resistance, was more favorable in the iproniazid group. The higher plasma levels attained in iproniazid therapy may well account for the greater incidence of toxic effects in patients treated with this drug. It seems unlikely, however, that the differences in the isoniazid and iproniazid plasma levels during therapy are sufficient to offset the fact that iproniazid is about 60 times less active than isoniazid against the tubercle bacillus in vitro. Why, then, should patients treated with iproniazid progress at least as well, and also gain considerably more weight, than those treated with isoniazid? The author found that patients with bacteriologically resistant infections gained more weight with iproniazid therapy than they had done with isoniazid therapy when their tubercle bacilli were sensitive. Further trials showed that the gain in weight of tuberculous patients treated with iproniazid cannot be directly correlated with the initial severity or the progress of the disease and that iproniazid therapy can also induce an increase in the weight of certain nontuberculous subjects. Similar results have not been obtained with isoniazid. The author suggests that iproniazid therapy exerts some specific effect upon appetite, and thus upon general nutrition, quite apart from its antituberculous properties and that this factor may have contributed to the relatively favorable progress of the group of patients treated with iproniazid.

Studies on Pulmonary Cancer: 5. Influence of Occupation on Occurrence of Primary Epithelial Pulmonary Tumors. L. Kreyberg. Tidsskr. norske lægefor. **75:**342-344 (May 15) 1955 (In Norwegian) [Oslo, Norway].

The new carcinogenic situation has led to increased incidence, almost exclusively in men, of pulmonary carcinomas due to irritants. The etiological factors must be sought in the milieu of work and/or the habits of life. Two hundred seventy-five cases of primary epithelial tumors of the lung, microscopically examined and typed, are tabulated in three categories according to the kind of tumor and to occupation, i. e., work in open air and housework, office and professional work, and dusty work. The fairly even distribution of group 2 tumors in the different categories supports the earlier conclusion that they occur evenly in the population irrespective of special carcinogenic milieu. The tendency to the development of tumors of the irritation group is greater in men doing dusty work than in men in the other two categories, and there is a definitely increased incidence of group 1 tumors in men engaged in office and professional work. While the results indicate that dusty work is in some degree important for the development of the special pulmonary tumors, the work itself does not afford a full explanation. There is reason to investigate other sides of men's activities, among them their habits of life, to discover, if possible, other essential factors. Theoretically, dusty work in itself need not be significant, if it is accompanied by other factors relevant to the development of pulmonary tumors.

Cleansed Cavities and Bullous Neocavities After Chemotherapy. A. Bernou and J. Brun. Presse méd. **63:**894-896 (June 11) 1955 (In French) [Paris, France].

The bullous images seen at roentgenography to persist or appear after chemotherapy of ulcerocaseous tertiary tuberculosis do not all have the same structure or origin. Those that are sequelant are of two types: finely encircled bullous cavities and sclerocystic cavities with somewhat thickened connective structure. These lesions are penetrable to Lipiodol and may simulate bronchiectasis. There are also bullous neocavities appearing at the time of retraction of the lesion; they may be located at the site of the original cavity or at some distance from it. These cavities may be cystic bronchiectasis with bronchoalveolar dilatation occurring at the time of retraction of the lesion and furthered by the consecutive sclerosis, or, more commonly, single or multiple emphysematous bullae, the pathogenesis of which is not clear. It would seem that retraction of the lesion in chemotherapy causes distention, leading to emphysematous bullae by way of compensation. The bullae appear more frequently in those portions of lung where the elastic tension has been especially dissociated and made fragile by the tuberculous process. Chemotherapy plays a part in this development in that it produces retraction of tuberculous lesions and atrophic interstitial sclerosis. Isoniazid is especially important in the latter phenomenon. A practical conclusion drawn from these considerations is that radical treatment ought not to be practiced on sequelant bronchiectasis or emphysematous bullae in the mis-

taken belief that they are persisting cavities. Even bullous or sclerocystic cavities are not necessarily best treated by excision, as shown by the fact that, in the authors' follow-up of 18 patients with pseudoemphysematous cavities, no relapses occurred during a period of from two to eight years.

Cortisone and Syphilis: Results of and Comments on Corticotherapy in Ninety Cases of Syphilis. P. de Graciansky and C. Grupper. Semaine hôp. Paris **31:**2141-2161 (June 20) 1955 (In French) [Paris, France].

Ninety patients with syphilis of various clinical forms were given cortisone, hydrocortisone, or corticotropin before a course of penicillin therapy. This procedure was successful in preventing or attenuating Herxheimer's reaction. It also affected the clinical manifestations of the disease. 1. Chancres stopped oozing, became softer, and rapidly epidermized. 2. Certain features of secondary syphilis were favorably influenced, but less so as they were more severe. 3. The gummas and ulcerations of tertiary syphilis were greatly benefited. 4. There was evidence to indicate that corticotherapy had an effect on the functional signs of aortic syphilis. 5. In nervous syphilis, pain resistant to other kinds of therapy yielded to cortisone. Local injections of hydrocortisone proved excellent in the treatment of four patients with tabetic dislocating arthropathy of the knee. 6. Symptomatic benefit was obtained in interstitial keratitis of late congenital syphilis. Corticotherapy had effect also on the laboratory signs of syphilis: Treponema, reagin, amboceptor, and anomalies of the cerebrospinal fluid. The normal course of syphilis after penicillin therapy was unaffected, nor was the sensitivity of Treponema organisms to penicillin altered. In patients allergic to penicillin and in pregnant patients, cortisone favors a better tolerance to the antibiotic. Its value in the severe pain and visceral paroxysms of tabes, in arthropathy, and in interstitial keratitis make cortisone an excellent adjuvant in the treatment of these forms of syphilis. Hydrocortisone appears to be the best agent to administer and is now being used routinely by the authors.

Use of Pentolinium Tartrate With and Without Hydralazine in the Treatment of Severe Hypertension. H. M. Perry Jr. and H. A. Schroeder. New England J. Med. **252:**1057-1066 (June 23) 1955 [Boston].

Pentolinium tartrate is a pentamethonium derivative in which the two terminal quaternary nitrogen atoms are included in a pyrrolidine ring rather than each being trimethylated. This substance is an autonomic blocking agent like its parent methonium compound. It is longer acting and has greater absolute effect on blood pressure, coupled with a relatively smaller effect on gastrointestinal motility, than the hexamethonium ion. Pentolinium tartrate was given orally to 30 severely hypertensive patients; 12 had received no previous effective antihypertensive therapy, 12 had shown low tolerance for hexamethonium chloride in combination with hydralazine, and 6 had manifested late toxic reactions to hydralazine after their blood pressure was well controlled by such combined therapy. The authors describe the dosage employed in each of these groups, cite illustrative case histories, and describe studies on urinary pentolinium recovery. As a chemical sympathectomizing agent, pentolinium tartrate demonstrated a limited but definite improvement over other methonium salts for some, but not for all, patients. By weight it was approximately 5 times as effective in lowering elevated blood pressure as hexamethonium chloride; ion for ion it was 10 times as powerful. Although every unpleasant manifestation of autonomic blockade was observed, there usually was relatively less parasympatholysis and hence fewer and milder untoward reactions. It was most useful in persons with very severe hexamethonium side-effects, particularly those who needed the greatest amounts of that drug for effective control of blood pressure. Unfortunately, the vasomotor instability accompanying normotension in occasional patients requiring large hexamethonium dosages was often more frequent and persistent with pentolinium tartrate. Substituted hydrazines remain unique substances without which it has been impossible to control the most severe stages of hypertension, even with enormous doses of blocking agents. When begun before the appearance of frank uremia, the combination of pentolinium tartrate and hydralazine gave satisfactory control of the worst cases of hypertension. The six patients in whom collagen disease had followed the administration of hydralazine were given pentolinium tartrate combined with other drugs, with varying results.

Occurrence of Gastric Cancer Among Patients with Pernicious Anemia at the Boston City Hospital. N. Zamcheck, E. Grable, A. Ley and L. Norman. New England J. Med. **252:**1103-1110 (June 30) 1955 [Boston].

Diagnostic index files from the general wards of the Boston City Hospital, the Outpatient Department, the Thorndike Memorial Laboratory, and the Mallory Institute of Pathology provided 1,222 names of patients with pernicious anemia diagnosed between 1915 and 1951. Observations were recorded on 658 of these patients by a group of physicians investigating the pathogenesis of pernicious anemia at the Thorndike Memorial Laboratory. Strict criteria were employed for making the diagnosis of pernicious anemia. Of the original 1,222 patients, 75 had diagnoses recorded of both pernicious anemia and gastric cancer. Only 28 of these, however, were sufficiently well documented to be accepted for this study. Twenty-one of these were among the 658 Thorndike patients. The lesion was seen grossly at autopsy in 14 patients and at laparotomy in 11 others. The remaining three had unequivocal clinical and x-ray evidence of gastric cancer. These studies confirm previous reports of the high prevalence of gastric cancer among patients with pernicious anemia. Depending on the sample selected, however, the frequency of gastric cancer in the present series varied from less than 1% to more than 11%. For instance, in the Thorndike group it was 3.2%, and in the Boston City Hospital (without the Thorndike group) it was 1.2%; in 59 autopsies performed in the Thorndike group it was 11.9%, and in 108 autopsies at the Boston City Hospital it was 6.5%. The authors feel that the high rates of cancer in pernicious anemia patients justify the routine use of screening tests. The relative simplicity and accuracy of gastric cytology justify consideration of its use as a screening adjunct.

Jaundice Associated with the Administration of Chlorpromazine, SKF-2601-A (Thorazine): Report of Three Cases, with Biopsies of the Liver. E. R. Movitt, M. A. Meyer, A. M. Snell and others. Gastroenterology **28:**901-913 (June) 1955 [Baltimore].

The authors report three patients who sustained liver injury during the course of chlorpromazine therapy. Needle biopsies of the liver were obtained from them all; one patient was subjected to an exploratory laparotomy that failed to reveal any evidence of extrahepatic biliary obstruction. All patients recovered. The clinical picture is that of obstructive jaundice, with elevated serum alkaline phosphatase and total serum cholesterol but normal flocculation tests. Histological studies reveal intrahepatic cholestasis as the most prominent feature. The authors emphasize that the possibility of chlorpromazine-induced jaundice should be entertained in all icteric patients, particularly when they present diagnostic problems involving possible surgical exploration.

Problem of Late Recurrences of Malaria in Man. M. Creyx, J. Leng-Lévy and G. Laborie. Presse méd. **63:**877-878 (June 8) 1955 (In French) [Paris, France].

The authors report a case of relapse of malaria with Plasmodium malariae in a 56-year-old man a week after he had undergone an operation on the liver. He had been infected 36 years previously in the Orient and had not had any symptoms in the intervening period. It is pointed out that, among patients with late recurrences of malaria, there are a rare few who can transmit the disease to others via blood transfusions. Others have febrile bouts of malaria, and, since there is no question of reinfestation in nonpaludic countries, this raises the problem of late recurrence after a long period of persistence of the original infestation in some latent form. The possibility of malaria must be envisioned so that differential diagnosis can be made between paludic attacks and pseudopaludic attacks in the nonpaludic countries. Evidence from the literature is cited to show that this concept of late recurrences of malaria is consistent with present knowledge on malarial pathology.

SURGERY

Routine Supraclavicular Biopsy in Suspected Bronchiogenic Carcinoma. E. F. Skinner, J. Hall, D. Carr and S. G. Robbins. Am. Surgeon **21**:590-600 (June) 1955 [Atlanta, Ga.].

Seventy male and 30 female patients between the ages of 4 and 78 years who were suspected of having bronchogenic carcinoma were subjected to supraclavicular biopsy. The results of biopsy were positive in 43 of the 100 patients. The results of biopsy were negative in 41 patients, and they were negative also in 16 other patients with such diseases as bronchiectasis or pneumonia. Thus the total incidence of negative results from supraclavicular biopsies was 57% and that of positive results 43%. This is believed to be a highly profitable ratio since even biopsy of the lungs is not always completely diagnostic. In 10 patients, the diagnosis was made clinically of bronchogenic carcinoma but was not confirmed by tissue study. None of these patients had positive results from a supraclavicular biopsy. In four instances no tissue was sent to the laboratory for examination as the surgeon did not believe that clinically important nodes were present. This was an error as sometimes small nodes contain microscopic cancer. In all patients subjected to supraclavicular biopsy the prescalene fat pad and the nodes therein should be sent to the laboratory for pathological study and also for bacteriological examination. In 18 patients no nodes were palpable, and yet results from supraclavicular biopsy were positive. In 25 patients the nodes were palpable, and the results of supraclavicular biopsy were positive. In many of the patients, the positive results of the biopsy saved the patient major surgery, as such distant metastases made surgical cure highly improbable. Of the 43 patients in whom the results of biopsy were positive, 41 had no definite diagnosis before the biopsy was done, but they had had many other clinical tests. Thus in 41 of the 100 patients the first positive cellular diagnosis was established by the supraclavicular biopsy. Biopsy of the supraclavicular nodes is helpful often enough to be used frequently or even routinely in all patients in whom bronchogenic carcinoma is suspected before major surgery is done.

Results of Pulmonary Exeresis for Tuberculoma. M. Bérard, P. Galy and E. C. Saubier. Presse méd. **63**:893-894 (June 11) 1955 (In French) [Paris, France].

The authors use the term "tuberculoma" to define tuberculous foci that are caseous, altered, stratified, and of a certain volume. Eighty-two such lesions were found among 1,200 operative specimens from lung excisions performed between 1948 and 1954. Results in the 82 patients with tuberculoma were strikingly good; there was no mortality, and only two recurrences (occurring in 2 of the 12 patients with excavated lesions). Most patients returned to their previous occupations after three to six months' rest. Tuberculoma can be said to be a relatively benign form of tuberculosis, in which the lesions have a tendency to localize and organize. Owing to this defense on the part of the body, exeresis is simple and easy. To conclude from this reasoning that excision can be dispensed with altogether would be dangerous, since excavation of the lesions is always a possibility, with the attendant danger of bronchial dissemination. It is pointed out that exeresis is not so good a treatment for caseous foci that do not fulfill the requirements for diagnosis of a tuberculoma (this could only be verified at examination of the operative specimen); in a series of 136 excisions of caseous foci there were 10 recurrences.

Investigations into Thymic Disease and Tumour Formation. G. Keynes. Brit. J. Surg. **42**:449-462 (March) 1955 [Bristol, England].

In 1942 Keynes was asked to perform a thymectomy on a woman with a severe, progressive myasthenia gravis. The myasthenia was arrested after the operation and ultimately abolished. Encouraged by this success, he proceeded to extirpate thymus glands from myasthenic patients, and in due course the operation of thymectomy became well established as a recognized form of treatment for myasthenia. This author is chiefly concerned with the thymic tumor, or thymoma, found in patients with myasthenia gravis, and sometimes in patients without symptoms. Of the first 11 patients with tumors operated on between April, 1942, and January, 1948, only 3 survived for more than two years and only one is known to be alive at present. Three of the 11 died postoperatively. This is in striking contrast with the general results of thymectomy when there is no tumor. Among these the postoperative mortality is 4%, and 65% of the survivors are apparently cured or nearly so. It also became plain that tumor formation was to be expected in a considerable proportion of patients with myasthenia gravis. Of 260 patients with myasthenia gravis who came to the author's attention 41 had a thymoma, an incidence of 15.4%. The author analyzes a total of 51 thymic tumors, 10 others having been contributed by four other surgeons. Twenty-two of the patients were men, and 29 were women. There is still much confusion about thymic tumors, because of the large variety of tumors that may arise in the mediastinum, the uncertainty as to which of them have really arisen from the thymus gland, and the difficulty experienced by pathologists in classifying the true thymomas. Pathologists have not made up their minds whether to call the true thymomas innocent or malignant, and the very name of lymphoepithelioma that they have commonly applied to them betrays their uncertainty. The presence of a thymic tumor is nearly always associated with severe symptoms. The response of these patients to neostigmin is slow and sometimes incomplete, so that suspicion should be aroused at an early stage. Whereas myasthenia gravis usually has a rather slow onset, rapid onset is a conspicuous feature of the myasthenia due to a thymoma. Treatment of the tumor by primary operation has proved unsatisfactory. Since 1947 the author has treated every thymic tumor diagnosed before operation by means of the million-volt machine, and a few patients in whom the diagnosis was missed have been treated very soon after operation. At present, 26 patients have been treated in this way, 21 of whom have subsequently had an operation performed. In one the tumor was not removable, and the patient died 18 months later. Of the remaining 20 patients, 4 have died, one was no better, 3 improved at first but relapsed afterwards, 8 have considerably improved, and 4 are quite well and symptomless. This is a very different result from that obtained earlier in the series with primary operation. Great accuracy of exposure to the x-ray beam is desirable to avoid injury to the lungs, so that precise localization of the tumor by preliminary radiology is essential. Tomography may be of great assistance. The total dosage, up to 4,000 r, may have to be spread over a period of four weeks or sometimes longer. During the course of the x-ray treatment the tumor, as demonstrated by radiology, can be seen to shrink and sometimes to become less opaque. While the first five thymic tumors treated by the author were not diagnosed before operation, he learned gradually what to look for in the x-ray film. In commenting on the pathological aspects, he suggests that the term malignant has been too rigidly interpreted, but he gives reasons why all of these tumors are in some respects malignant. Thymic disease and tumor formation is a complex problem.

Arterial Replacement by "Orlon" Cloth: A Preliminary Report of Its Experimental and Clinical Use. J. B. Kinmonth, G. W. Taylor and R. H. Lee. Brit. M. J. **1**:1406-1408 (June 11) 1955 [London, England].

Grafts used as substitutes for arteries serve chiefly as scaffolding on which the tissues of the host develop a new vessel. Success does not depend on the survival of cells from the donor. Excellent results have been obtained in cases in which no attempt was made to maintain the viability of the cells of the graft. The use of artificial materials as arterial prostheses seems, therefore, to be logically justifiable. An inert plastic cloth, Vinyon-N, was successfully used for this purpose in 1952 by Voorhees and his colleagues, but since this material was not readily obtainable in England, the authors chose Orlon for their experiments. Mongrel or greyhound dogs were anesthetized and tubes of Orlon were used as replacements for excised segments of the distal abdominal aorta or as shunts to conduct the blood around an artificial aortic block produced by tying the aorta. All but one of the prostheses remained patent. At the time of writing four of the animals were still alive and under continuing study. Examination of the Orlon tubes at autopsy in the others showed that they become lined with smooth, glistening hyaline collagenous tissue, the innermost layer of which is indistinguish-

able from intima, and that they are surrounded by a thick layer of fibrous tissue, which encases and grows into the meshes of the cloth. They are well tolerated, and the fact that they retain their tensile strength is of great practical importance, because mere unsupported collagen would be expected to stretch under pressure and with the passage of time. No evidence of calcification was found on x-ray examination in any of the prostheses or their surrounding tissues. These encouraging results led the authors to use similar prostheses in three patients with severe arterial disease. One patient, who had extensive renal lesions, died of renal failure in the postoperative period. The other two were alive, and the prostheses were functioning perfectly five and six months after the operation respectively. One of these patients, who had been forced to stop work because of severe pain in the leg on walking, was able to walk three-quarters of a mile without claudication.

Importance of and Considerations on the Use of Homoplastic Arterial Grafts in Clinical Practice: Late Results in Twelve Cases. L. Provenzale. Policlinico (sez. chir.) **62:**65-96 (April) 1955 (In Italian) [Rome, Italy].

Late results are reported on 12 patients in whom homoplastic arterial grafts were used to correct five coarctations of the aorta and seven tetralogies of Fallot. The use of a graft was indicated in the patients with the coarctation because the narrow portion of the vessel was unusually long or because the condition of the vessel's walls suggested that the suture might not hold. The results were encouraging in that the graft made possible a complete functional restoration because a regular arterial lumen, which often is not obtained with an end-to-end anastomosis, was reconstructed. At the time of writing, three patients had resumed their normal activities 24, 19, and 16 months, respectively, after the operation. One patient died after four months following dehiscence of the graft, and another died after nine months from causes independent of the intervention (angina pectoris). There was reason to assume that the graft had been functioning well. In the seven patients with tetralogy of Fallot the graft was resorted to because a short and narrow subclavian artery was present. A homoplastic subclavian artery was used in two patients, a hypogastric artery in four, and an artery that had been removed from the lower lobe of a lung because of multiple cysts in one. These patients were followed from 5 to 22 months. There was evidence of good functioning of the graft in six of them and indication of partial thrombosis of the graft in one. The age of the patients with coarctation of the aorta ranged from 15 to 28 years, that of the other patients from 5 to 25 years. The author discusses the problem of the supply of grafts, the most convenient methods for their preservation, and the best time for their use on the basis of his experience with the functioning of an artery bank, which was established in Rome in 1951.

The Surgical Treatment of Bleeding Esophageal Varices. R. R. Linton. West. J. Surg. **63:**366-367 (June) 1955 [Portland, Ore.].

Patients with esophageal varices are in constant danger of death from massive hemorrhage. Gastroesophageal tamponage with an intragastric balloon is the best method of obtaining temporary control of bleeding, when it occurs, but it should not be continued for more than 24 hours because of the danger of ulceration and perforation of the esophagus. Discontinuance of the tamponage is often followed by recurrent hemorrhages which constitute a serious threat to life. Supplementary measures are, therefore, needed to prevent the ruptured varices from bleeding for a longer period, usually several weeks, so that the patient's general health can be improved sufficiently to permit definitive surgical treatment. The method of emergency treatment used during the last four years at the Massachusetts General Hospital has been to secure immediate control of massive bleeding by gastroesophageal tamponage; to restore the patient's blood volume by transfusions as needed; and then to suture or ligate the bleeding vessel through a transpleural transesophageal exposure. Transpleural transesophageal suture was performed 24 times as a lifesaving procedure in 23 patients, with only one operative death. Three patients died about six weeks after the suture procedure, but in the other 19 (83%), 16 of whom are still living, life was substantially prolonged. This is a great improvement over a probable mortality rate of at least 60 to 70% when conservative measures alone are used. The portal bed block responsible for the development of esophageal varices may be extrahepatic, secondary to Banti's disease, or intrahepatic, secondary to cirrhosis of the liver; in either case, the most satisfactory method of definitive treatment is the construction of a splenorenal or direct portacaval shunt. Splenectomy with an end-to-side splenorenal anastomosis is the procedure of choice in most patients. Splenectomy, however, should not be undertaken unless the surgeon is prepared to construct a splenorenal anastomosis at the same operation, because it may be his only opportunity to do so, especially in a patient with an extrahepatic type of portal bed block. Follow-up of 74 patients who survived the construction of a splenorenal or direct portacaval shunt showed that 66 (90%) were alive and for the most part in good health from one to seven years after operation. Mortality rate accompanying bleeding esophageal varices in patients with cirrhosis of the liver is higher than that in patients with Banti's disease, undoubtedly because of the serious effect produced by massive bleeding on an already damaged liver.

General Hypothermia in the Treatment of Massive Hemorrhage: Contribution to Study of Other Possibilities of Its Use in Transfusions of Blood and Substitutes. P. Goffrini and E. Bezzi. Presse méd. **63:**847-851 (June 1) 1955 (In French) [Paris, France].

The authors summarize the results of their previous research, in which it was shown that dogs in hypothermia could survive and completely recover from massive, rapid exsanguination. The present series of experiments was performed on 22 dogs, 18 of which were exsanguinated under hypothermia and 4 at normal temperatures. Electrocardiograms, arterial pressures, and respiration were studied to determine the exact mechanism of death from acute anemia. The two pathological factors, hemodynamic imbalance and anoxia, play distinct and separate parts. In the first period of hemorrhage, the changes caused by emptying of the heart and great vessels can be reversed and death prevented by proper fluid replacement; but in the second phase, characterized by progressive decrease in hemoglobin level and hematocrit, there appear disturbances of conduction, excitability, and contractility of the myocardium that are due solely to anoxia. Four practical deductions are made from this work. 1. The clinical application of controlled hypothermia is of great value in the general management of patients in a state of acute hemorrhage, with respect to the consequences of anemic anoxia, though of course it is no substitute for transfusion therapy. 2. Although whole blood is the therapeutic agent of choice in acute hemorrhagic states, substitutes are useful in emergencies resulting from the use of controlled hypothermia. 3. In hemorrhagic states with particular contraindications to total reintegration of the circulating blood volume, it is possible to practice moderate application of a quantitative and qualitative replacement of the lost blood, since the body has a surprisingly high degree of tolerance to exsanguination. 4. In exchange transfusion alternate subtraction and substitution of blood in greater quantities is possible, with consequent simplification of technique and reduction of the inherent dangers of repeated insults to the circulatory equilibrium.

Surgical Management of Massive Acute Upper Gastrointestinal Hemorrhage. C. E. Welch, A. W. Allen and G. A. Donaldson. New England J. Med. **252:**921-928 (June 2) 1955 [Boston].

A comparison of death rates from massive hemorrhage from ulcer, treated either medically or surgically, or in combination, in the Massachusetts General Hospital, shows a slight increase from the decade 1923 to 1932 to the present, with a rise in mortality from 13 to 17%, that is, the general death rate from bleeding ulcer has not diminished but has slightly increased, despite a much wider use of surgical treatment. The authors do not believe, however, that early surgical treatment should be abandoned, because this increased mortality is due chiefly to the increasing age of the hospital population and various postoperative complications due to technical errors. Any mortality study of massive hemorrhage must take into account the age distribu-

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tion of the patients treated. The mortality of all patients treated by either medical or surgical methods ranged from 7% in those under 50, to 29% in those 70 years of age or over. Nevertheless, individual analysis of patients over 80 years of age revealed that they tolerate early surgical treatment better than expectant treatment. The authors believe that a continued lowering of mortality will depend on prevention of postoperative complications and on earlier surgical treatment of patients with massive hemorrhage who are over 60 years of age. The pulmonary complications are the most important cause of the rather high mortality. The most common type of pulmonary complication is aspiration pneumonia. The factors necessary to produce it are a full stomach, or one with an incompetent cardiac sphincter, and depression of the cough reflex. The first of these may be counteracted by keeping the stomach empty during the early postoperative period. Decompression of the stomach can be obtained by the Levin tube, but the authors use a catheter introduced in a retrograde fashion through the efferent jejunostomy loop into the stomach, as described by Allen and Donaldson. This will allow much better clearing of the respiratory tree than can occur when the pharynx is continuously irritated by the Levin tube. Furthermore, this catheter can be tolerated much better and longer than a nasal tube. This technique is especially valuable in elderly, depleted, and very ill patients. Some postoperative deaths have been due to a summation of minor complications. Electrolyte imbalance is another important factor. Continued aspiration of gastric contents and replacement therapy, with intravenous administration of dextrose in isotonic sodium chloride solution may produce a hypochloremic hypokaliemic alkalosis, which may result in death. Replacement of potassium is the most important feature in the prevention of this syndrome. These and other methods designed to prevent postoperative complications were used in 55 patients with hemorrhage from gastric ulcer, and 53 recovered.

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Subtotal Versus Total Gastrectomy for Gastric Malignancy: With a Discussion of the Various Technics Advocated in the Operation of Total Gastrectomy. C. J. Hunt. West. J. Surg. **63:**337-343 (June) 1955 [Portland, Ore.].

Total gastrectomy, which is almost certain to be accompanied by a higher operative mortality rate than radical subtotal gastrectomy, should not be generally adopted as the standard surgical treatment for cancer of the stomach. The results will usually be just as good, and many of the disagreeable consequences of total gastrectomy will be avoided, in patients with distal gastric lesions, if an extensive lymphatic dissection is combined with a radical subtotal gastric resection in which a remnant of the fundus is left to serve as a food pouch. Total gastrectomy, however, should be used more frequently for lesions in the midportion of the stomach, and it is certainly indicated for all lesions in the upper half of the stomach, for carcinoma of the linitis plastica type, and when it is necessary for the removal of all accessible cancer. Attempts have been made to overcome the undesirable effects of the operation in a number of ways. A Roux-Y procedure has been used to divert the duodenal contents and so prevent reflux esophagitis, and various segments of the intestinal tract have been transplanted to take the place of the stomach in the hope of maintaining the normal flow of the food content by way of the duodenum. The use of any part of the colon for this purpose is physiologically and anatomically undesirable, because the right colon is an absorptive structure for fluids and the transverse colon, when transplanted, is in an antiperistaltic position in relation to the esophagus and the duodenum. The author, therefore, advocates the use of the jejunum as the best available substitute for the stomach in attempting to overcome the disadvantages of total gastrectomy. His technique consists in using the Roux-Y procedure with the upper jejunum and at the same time constructing a food pouch out of the distal segment of the jejunum. It has been used after total gastrectomy with no operative mortality and excellent results in seven consecutive patients, all of whom have had capacity for a good food intake without discomfort. Few patients who require total gastrectomy can be cured, and in none of these cases was a cure expected. All the patients gained weight, however, and none had any evidence of a dumping syndrome; on the contrary, x-ray films showed an unhurried progressive emptying rate.

Treatment of Chronic Relapsing Pancreatitis. F. L. Coffey, G. F. Woelfel, K. J. David and M. G. Burdette. Am. Surgeon **21:**569-576 (June) 1955 [Atlanta, Ga.].

Thirteen patients, aged 29 to 62 years, with chronic relapsing pancreatitis were treated by celiac ganglionectomy and bilateral splanchnicectomy, with or without sphincterotomy and biliary surgery. In the routine supragastric approach, the gastrohepatic ligament was entered just to the left of the portal vein. The crux of the diaphragm and the aorta at the level of the celiac axis were identified, exposing the celiac ganglions that surround the axis. The greater and lesser splanchnic nerves were isolated as they pass through the crux of the diaphragm to enter the ganglions. Both ganglions were removed by blunt and sharp dissection and the splanchnic nerves were cut 2 to 5 cm. proximal to their entrance into this sympathetic plexus. A different surgical approach to the celiac ganglions, i. e., the retroduodenal-retropancreatic, was devised for use in obese patients and those with a short gastrohepatic ligament, high-lying pancreas, or short celiac axis. In these patients, the lateral peritoneal reflection of the second portion of the duodenum was incised, and the duodenum and adjacent pancreas were rotated anteriorly and to the left, exposing the underlying vena cava and the right renal vein and artery. As the structures were rotated medially, the aorta, the right suprarenal gland and vessels, and the right celiac ganglion were exposed. It is of prime importance to remove all ganglionic tissue with a portion of the splanchnics to insure complete relief of pain, because the celiac ganglions also receive branches from lumbar nerves 1, 2, and 3. Often the superior mesenteric ganglions also are removed to insure relief. Of the 13 patients, the first was operated on two years ago and the last two were operated on a few months ago. It is still too early to evaluate the results in the last two patients. Of the other 11 patients, 9 had complete relief of symptoms, one had partial relief, and one was a therapeutic failure. Two of the nine patients had been in various hospitals over a period of three years and were branded neurotics; they now have been completely free of symptoms since operated on by the authors. Two of the patients showed calcification of the pancreas and six others had biopsies that showed chronic pancreatitis. In patients with obvious chronic pancreatitis, biopsies were not performed because of the added dangers of hemorrhage and formation of fistula. The rationale of the authors' surgical procedure in the management of chronic pancreatitis is: (1) all pain fibers to the pancreatic area, duodenum, and biliary tract have been interrupted by the splanchnicectomy; (2) by celiac ganglionectomy and splanchnicectomy, spasms of the sphincter of Oddi and of the vessels supplying the pancreas have been relieved; and (3) by the splanchnicectomy the blood supply to the pancreas is increased, aiding healing of the organ. Celiac ganglionectomy and bilateral splanchnicectomy, with the correction of biliary disease, if it is present, are effective in treating chronic relapsing pancreatitis, and warrant further investigation.

Prophylaxis of Thromboembolism with Anticoagulants, Particularly Marcoumar. H. J. von Brandis. Chirurg **26:**241-244 (June) 1955 (In German) [Berlin, Germany].

Three men between the ages of 21 and 64 years, who sustained a pulmonary infarction before they underwent a major abdominal operation or between two abdominal surgical interventions that followed one another within a short interval, were given a synthetic heparin preparation (Thrombocid) for three days. On the fourth day treatment with 3-(1-phenylpropyl)-4-hydroxycoumarin (Marcoumar) was started. The first patient had carcinoma of the lesser curvature of the stomach and was operated on three weeks after the pulmonary infarction. The postoperative course was uneventful while prophylactic treatment with Marcoumar was continued. There was no recurrence of embolism, and the patient was discharged in good condition four weeks after the surgical intervention. The second patient had carcinoma of the rectum, and in preparation of a sacroabdominal resection a double current transverse anus was formed in a first-stage intervention. Pulmonary infarction occurred on the 19th postoperative day, immediately before the planned second-stage intervention. The patient was given heparin for three days, and Marcoumar therapy was started on the fourth day. The

sacroabdominal amputation was performed on the 33rd day after the infarction. The postoperative course was uneventful, there was no recurrence of the infarction, and the patient was discharged seven weeks after the second surgical intervention. The third patient had appendicitis, was operated on, and sustained a pulmonary infarct on the seventh postoperative day. He was given heparin, and Marcoumar therapy was started on the fourth day. On the ninth day after the infarction a classic strangulation ileus developed that required repeated laparotomy. Marcoumar therapy was discontinued at the time of the operation but was resumed on the fifth postoperative day with cautious regulation of the coagulation values on a median level by small doses of Marcoumar. The patient was discharged on the 17th day after the ileus operation. No embolism recurred. The occurrence of embolism in these three patients emphasizes the difficulty of evaluating surgical patients with regard to the risk of embolism and the necessity of general prophylaxis of thromboembolism. Marcoumar therapy represents a definite progress in this regard as compared with bishydroxycoumarin (Dicumarol) treatment. The selection of patients is done with careful consideration of the function of the liver. Marcoumar therapy is contraindicated in older patients with lesions of the liver and the adrenals or with vascular lesions and in many patients with diseases of the gallbladder and the biliary tract, although in them the risk of thromboembolism is high. Continued control of the blood coagulation values is essential, which makes anticoagulant therapy difficult in small hospitals. Marcoumar prophylaxis can be omitted if examination of the blood coagulation values before the institution of therapy shows delayed coagulation values and low Quick values, respectively. Intensive prophylactic treatment with Marcoumar is indicated in cases with markedly low coagulation values and simultaneous high Quick values.

Vena Cava Inferior Ligation in Congestive Heart Failure: Report on 100 Cases in Five Years. J. Bernath, R. Guillemot, P. Samuel and R. Heim de Balsac. Am. Heart J. **50:**112-128 (July) 1955 [St. Louis].

R. Heim de Balsac has used ligation of the inferior vena cava for the treatment of congestive heart failure since 1949, and since then a large number of patients have received this treatment at the Centre de Broussais in Paris. In this paper the authors review the first 100 patients operated on between April, 1949, and November, 1953. Immediately after the operation, the patient breathes more easily, hepatomegaly regresses, and peripheral edema disappears. However, postoperative complications are frequent. Edema of the lower extremities occurs in the presence of old preexisting inflammatory changes in the veins. The dietetic restrictions for cardiac patients must be continued after the operation. The chief indications for ligation of the vena cava are mitral and combined mitral and aortic disease, particularly in patients in whom rheumatic activity has ceased. Cardiac disorders without valvular lesions and arterial hypertension are also acceptable indications, but the experience of the authors is too limited to assess the results of this operation in congenital heart disease. Absolute contraindications to this operation are cardiac disorders with high output, such as chronic cor pulmonale and thyrotoxicosis, as well as certain valvular lesions, such as advanced aortic stenosis, in which the circulation is greatly restricted. The authors avoid the operation in patients in whom the cardiac lesion is progressive, which is especially likely in patients less than 30 years of age. The mortality was particularly high during the first year after operation (23%). Deaths at this time are partly due to the continuation of cardiac degeneration and partly to vascular accidents. Ligation of the inferior vena cava has no effect on attacks of rheumatic fever or on cerebrovascular accidents. The survival rate after the first year was 60%, after the second 49%, after the third 40%, and after the fourth and fifth years 33%. These values are somewhat distorted by the fact that in the beginning the surgical mortality was excessively high (20% in the first 50 patients, compared with 6% in the second group of 50). The duration of the improvement depends on whether the patient follows the prescribed medical diet, on the changes in his cardiac lesions, on his liver function, on his preoperative kidney function, and on the rapidity with which collateral circulation is established. The last factor appears to destroy the beneficial effects of the operation; cardiac insufficiency reappears and the patient returns to a status similar to that which obtained prior to operation. Nevertheless, ligation of the inferior vena cava seems a satisfactory palliative treatment of intractable cardiac insufficiency, particularly when accompanied by the threat of pulmonary emboli. The results corresponded to those obtained by other major palliative surgical procedures. The authors feel that the functional improvement achieved and the prolongation of life justify the operative and postoperative risks to the patients.

The Significance of Nodular Goiter. J. C. McClintock. Virginia M. Month. **82:**299-301 (July) 1955 [Richmond, Va.].

Of 1,098 patients with nodular goiter operated on by the author between 1949 and 1953, 843 had nontoxic nodular goiter and 255 had toxic nodular goiter. Of the 843 with nontoxic nodular goiter, 347 had single nodules, and cancer was first diagnosed by the pathologist in 27 (7.7%) of these. Four hundred eighty-six patients had multiple nodular goiters, and cancer was first diagnosed by the pathologist in 12 (2.4%). In only 10 patients with nontoxic nodular goiter was a preoperative diagnosis of cancer made and confirmed by pathological examination. Of the 843 patients with nontoxic goiter, 614 (73%) had noted or complained about the neck swelling. Two hundred eighty-six (34%) of the 843 patients had mechanical or obstructive symptoms. Of the 255 patients with toxic goiter, 25 (9.8%) had already developed cardiac decompensation and/or auricular fibrillation at the time they were first examined by the author. The damage so produced in even a few patients would have been avoided by removal of the goiter while it was still in the relatively innocuous nontoxic state. Although among the patients with nodular goiter there were no postoperative deaths, a total of 1,578 thyroidectomies for all types of goiter in all age groups were performed by the author in the course of the same five year period with only one death, and that was caused by cerebral hemorrhage. As long as the risk of cancer greatly exceeds the risk of surgery, conscientious physicians have no choice but to advise excision for nodular goiter.

Comparative Results of Primary Segmental Resection and Resection After Pneumothorax. A. Marmet, M. Jaubert de Beaujeu, G. Weill and others. Strasbourg méd. **6:**302-307 (May) 1955 (In French) [Strasbourg, France].

Segmental resection of the lung was carried out in 100 patients with pulmonary tuberculosis, in 30 of whom the indication for surgical treatment was unsatisfactory pneumothorax. Good results were obtained in 97% of the patients without pneumothorax as against 87% of those with pneumothorax. None of the former patients had incomplete results, while 3.5% of the latter did. In the first group 3% of the patients had poor results, as compared with 10% in the second group. Pneumothorax may make the pleura rigid and difficult to free. It may cause fibrous adhesions in the pedicle. It may have an effect on the fibroelastic system of the lung. It may even cause some active lesions to appear dormant. These effects interfere with the success of operation. Postoperatively, complete reexpansion may be difficult and slow in patients with pneumothorax, as it was in 43% of the 30 patients in this series, as compared with 17% of the other 70. New bouts of tuberculosis are more frequent in patients who have had pneumothorax. In every patient with tuberculosis an effort should be made from the time he is first observed to determine whether the nature of his lesions is such as might require resection at some time. If so, pneumothorax is contraindicated. In borderline cases, pneumothorax may be tried for not longer than six months but should be abandoned if success is not promptly obtained.

Prognosis of Bronchiectasis After Surgical Resection. R. L. Ginsberg, J. C. Cooley, A. M. Olsen and others. Surg., Gynec. & Obst. **101:**99-102 (July) 1955 [Chicago].

This study was designed to evaluate the results in 255 cases of bronchiectasis treated surgically at the Mayo Clinic in the years 1942 through 1953. Each patient was studied bronchoscopically, bronchographically, and pathologically. Acceptable follow-up was possible in 221 of the 255 patients, and these

221 form the basis of this report. These patients had primary bronchiectasis. All cases of bronchiectasis secondary to known foreign body, tuberculosis, tumor, broncholithiasis, or bronchostenosis were excluded. The surgical technique usually consisted of endotracheal anesthesia, posterolateral thoracotomy, individual ligation of hilar structures, and closed temporary intercostal drainage. In selected cases, antibiotics were instilled into the pleural cavity. Postoperatively, antibiotics were used in most cases. Oxygen therapy, blood transfusion, and fluids by vein were used as indicated. The postoperative retention of secretions is to be treated vigorously, and bronchoscopic aspiration is therefore often resorted to. As a result the complete picture of postoperative atelectasis is rarely seen. The authors found that the prognosis for surgical bronchiectasis is good. In this series, 75% of the patients obtained a good result, 21% had a fair or poor result, and 4% died. Residual disease is one of the factors that influences the prognosis adversely. This is the case particularly when it is ipsilateral. New bronchiectasis is usually associated with an unfavorable result, and the progression of residual bronchiectasis probably accounts for a number of unfavorable results. While postoperative complications do not preclude an excellent result, they seem to reduce greatly the chance of obtaining one.

Carcinoma of the Breast: The Status of Present Therapy with Special Reference to a Case Treated by Bilateral Adrenalectomy and Oophorectomy. W. Girdwood and A. L. Jackson. South African M. J. **29:**557-562 (June 11) 1955 [Cape Town, South Africa].

Girdwood and Jackson show that radical mastectomy has come into disrepute because it has been used indiscriminately, often in patients whose disease is beyond the reach of the surgeon. The argument in favor of the less extensive or the more radical procedure is dissolved if one definitely classifies cases of carcinoma of the breast as operable or inoperable. The stages described by various authors have not been uniform. The authors suggest a new method of staging and show that, with the concept of hormone-dependent tumors the value of hormone treatment and oophorectomy, or oophorectomy plus adrenalectomy or hypophysectomy, must be considered in relation to the practical clinical problem. Permission must always be obtained before operation so that, if microscopy shows numerous mitotic figures, oophorectomy may be performed at the same time as mastectomy. In all cases deep x-ray therapy should follow mastectomy. In the inoperable group there is possibly some advantage in preoperative deep therapy followed by mastectomy and bilateral adrenalectomy. The authors cite the case of a 51-year-old woman with breast carcinoma and osseous metastases who experienced dramatic improvement with healing of bone lesions after bilateral oophorectomy and adrenalectomy. The primary growth was an undifferentiated carcinoma, a type regarded by some authors as less amenable to this form of treatment. The progress and rationale of endocrine therapy are discussed, and reference is made to hypophysectomy in the treatment of breast carcinoma.

Diagnosis of Masked Pheochromocytomas. W. Mandl. Wien. med. Wchnschr. **105:**516-518 (June 25) 1955 (In German) [Vienna, Austria].

Three illustrative cases of masked chromaffinoma (two of masked pheochromocytoma in a 28-year-old woman and a 51-year-old man and one of masked pheochromoblastoma in a 49-year-old man) are described. The terms masked pheochromocytoma and pheochromoblastoma were considered highly suitable because of the presence of atypical symptoms and the absence of typical symptoms in the patients. The woman was admitted to the surgical department of the general hospital of Steyr, Austria, with a diagnosis of cholecystitis. Laparotomy revealed a normal gallbladder but a tumor of the adrenal, which was removed. Intraoperative palpation of the tumor did not cause any increase in blood pressure. Pathological examination of the specimen showed a malignant pheochromocytoma. Reviewed history revealed that the patient as a child had had sensations of heat in the head, redness of the face, tinnitus, and tremor of the hands but these symptoms subsided later on. It appears that the originally typical pheochromocytoma had lost its functional activity after the occurrence of malignancy. If the history had been recorded the first time in an exact manner, a tentative diagnosis of pheochromocytoma could have been made. A duodenal ulcer was suggested by the roentgenologic findings in the 51-year-old man who had abnormal pigmentation of the skin and of the buccal mucosa. Laparotomy revealed a large duodenal ulcer and in addition a tumor of the left adrenal, exploration of which caused systolic blood pressure to rise to 300 mm. Hg. The history did not reveal any subjective symptoms that could have suggested an increase in blood pressure, but later it was discovered that on the occasion of an internal examination a blood pressure of 210/110 mm. Hg had once been measured. The third patient had been hospitalized repeatedly for indefinite upper abdominal pain, but an increase in blood pressure had not been determined. An attack of severe, refractory pain prompted a laparotomy, which revealed a left adrenal tumor that could not be removed because of rapid deterioration of the patient's general condition. Postoperatively extreme sweating of the upper part of the body was observed and the history revealed that hyperhidrosis after the slightest physical and mental exertion had been observed for years. The term atypical pheochromocytoma or pheochromoblastoma was coined for chromaffinomas that are associated with permanent hypertension. The author's cases showed that there are patients in whom hypertension is not present as the guiding symptom or in whom hypertension may not be notable. The term masked pheochromocytoma or pheochromoblastoma, therefore, seems to be appropriate for all nontypical pheochromocytomas or pheochromoblastomas. A tentative diagnosis of chromaffinoma should be considered when only isolated symptoms of the adrenosympathetic symptom complex are present.

The Treatment of Duodenal Ulcer by Vagotomy and Gastro-Jejunostomy. R. L. Holt and A. F. Robinson. Brit. J. Surg. **42:**494-502 (March) 1955 [Bristol, England].

The combination of vagotomy and gastrojejunostomy was selected for several reasons, not the least of which was the desire to use the simplest and safest operation on the stomach, so that it could be performed by surgeons of relatively limited experience. From this point of view, gastrojejunostomy appeared to be preferable to pyloroplasty and gastric resection. It had the added attraction that by itself it gives good results in the treatment of duodenal ulcer. Its only serious drawback is that it may be followed by stomal or jejunal ulceration, a complication brought about by the persistent secretion of highly acid gastric juice in the duodenal ulcer patient. This secretion is known to be largely neurogenic in origin and is abolished by vagotomy, so that on theoretical grounds the combination of these two measures appears to be sound. The results reported are those from a conservative series of 243 patients operated on between October, 1947, and July, 1953. During this period all patients with duodenal ulcer referred to the senior author for surgical treatment were treated by vagotomy and gastrojejunostomy except for those who required emergency operations for perforation or hemorrhage. There was only one death in the 243 patients. This patient died three days after operation as a result of continuous diarrhea, cholera-like in its severity, that would not respond to treatment. Analyzing three-year results in 110 patients the authors found that 87% had satisfactory and 13% had unsatisfactory results. They feel that it is a method worthy of consideration. Since it has a low mortality, an absence of serious postoperative complications, and a high proportion of satisfactory results, an increasing number of surgeons recommend this treatment for duodenal ulcer.

A Three to Seven Year Postoperative Evaluation of 76 Patients with Severe Hypertension Treated by Thoracolumbar Sympathectomy. H. A. Zintel, A. M. Sellers, W. A. Jeffers and others. Surg., Gynec. & Obst. **101:**48-54 (July) 1955 [Chicago].

The 76 patients on whom this report is based were subjected to thoracolumbar sympathectomy between 1947 and 1951 and were followed up for a minimum of three and a maximum of seven years postoperatively. The patients were operated on for one or more of the following indications: (1) an average dia-

stolic pressure of 120 mm. Hg or more, (2) failure to respond to intensive medical therapy, and (3) evidence of progressive damage to the heart, kidneys, brain, or eyes. Surgery was considered to be contraindicated if: (1) the patient was over the age of 55 years, (2) the patient had been recovering from a stroke or coronary occlusion for less than six months, or (3) the patient had impaired renal function as evidenced by a blood urea nitrogen of over 20 mg. per cubic centimeter or a phenolsulfonphthalein excretion of less than 20% in the 15 minute specimen. A diastolic pressure of 140 mm. Hg or higher was not considered to be a contraindication. Various members of the Hypertension Clinic of the Hospital of the University of Pennsylvania had decided that the patients subjected to operation could not have been helped by any of the types of medical therapy available at the time of operation. One patient died during the postoperative period, and 53 patients are surviving at present, that is, the over-all mortality was 30% in three to seven years. Of the living patients 55% had an excellent or fair blood pressure response. Among the 53 survivors, relief of congestive failure has been obtained in 88%, and of angina pectoris and headache in 93% each. Progressive impairment of renal function has been infrequent. Definite improvement in renal function has not occurred. The survival rates including the operative mortality have been slightly better than those reported by Smithwick, but the data regarding survival indicate that thoracolumbar sympathectomy does extend the life of the patient beyond the length of life that can be expected following nonoperative types of therapy.

Results of Surgical Treatment of Ulcer on Basis of Five-Year Study. N. Blixenkrone-Møller. Nord. med. **53:**837-842 (May 26) 1955 (In Danish) [Stockholm, Sweden].

During the five-year period ending in 1950, 328 patients were treated operatively for duodenal ulcer, gastric ulcer, both ulcer forms simultaneously, cicatricial pyloric stenosis without apparently active ulcer, and peptic ulcer after earlier resection or anastomosis. The results are known in 325 cases. The time of observation was at least four years. Gastric resection, considered the method of choice in gastric or duodenal ulcer, was performed in 152, or 75%, of the 203 cases of duodenal ulcer and in 80, or 95%, of the 84 cases of gastric or gastric and duodenal ulcer, with seven deaths, or 4.3%. The result was fully satisfactory in 40% of the patients; 33% have to avoid certain foods; milder or more severe postcibal distress occurs in 17%; and the remaining 10% have various complaints. In some cases with densely adherent and inflamed duodenal ulcer, gastroenterostomy in combination with vagotomy was done, the results comparing favorably with those after resection. After gastroenterostomy for cicatricial pyloric stenosis in 20 cases, with four deaths, gastrojejunal ulcer developed in two instances. Vagotomy seems to be the method of choice for gastrojejunal ulcer after gastroenterostomy or gastric resection; the operation calls for meticulous care. No reason is seen for changing the operative indications for ulcer. If a patient with duodenal ulcer has had severe symptoms for a couple of years or if two series of treatments for ulcer have been without lasting effect, operation is indicated. In gastric ulcer, operation is called for sooner, not least because of the danger of cancer. If operation is deferred until pyloric stenosis sets in, the results are less favorable.

The Diagnosis of Orthopedic Lesions by Aspiration Biopsy: Results of 1,061 Punctures. C. E. Ottolenghi. J. Bone & Joint Surg. **37-A:**443-464 (June) 1955 [Boston].

If the nature of an osteoarticular lesion cannot be clarified by clinical or roentgenographic examination, Ottolenghi favors biopsy, either by the open method or by aspiration. He reviews his experiences in 1,061 aspirations carried out on 998 patients. The technique employed is that used in the Memorial Hospital in New York. Syringes with metal sleeves or at least metal tips should be used; needles should be 2 mm. in diameter, very acutely beveled and sharp; they should be fixed to the syringe as hermetically as possible. Puncture of the skin should be made with the point of a scalpel. In sclerotic lesions there is a high proportion of failures. Aspiration is made after a vacuum has been produced in the syringe by withdrawal of the piston. Punctures were made in nearly all of the bones of the skeleton, with the exception of those at the base of the skull and the vertebrae between the 1st and the 10th thoracic. The results were considered positive when the diagnosis could be established, doubtful when the diagnosis could not be confirmed and had to be verified by some other means, and negative when the diagnosis could not be made. Of the 1,061 aspirations 895 gave positive, 45 doubtful, and 121 negative results. A table, which lists 871 positive diagnoses confirmed by open biopsy, by surgical exposure of the lesion, or by the clinical course, shows that the majority of diagnostic aspiration biopsies were made for malignant tumors. The method is simple, carries no risk to the patient, and does not exclude other methods of diagnosis. It is particularly useful in deep locations such as the vertebral bodies or the pelvis.

Surgical Treatment of Spondylolisthesis Without Spine Fusion: Excision of the Loose Lamina with Decompression of the Nerve Roots. G. G. Gill, J. G. Manning and H. L. White. J. Bone & Joint Surg. **37-A:**493-520 (June) 1955 [Boston].

The prevalent concept of the cause of symptoms in spondylolisthesis is based upon the belief that, because of the defect in the pars interarticularis of the fifth lumbar vertebra, there is instability at the lumbosacral junction and thereby a tendency for progressive forward slipping of the vertebral body. Fusion has been the accepted treatment. The concept of instability, however, fails to explain the clinical course often seen in these patients. The authors observed a young woman in whom a severe sciatica developed following a hyperextension injury. The x-rays showed a first-degree spondylolisthesis. A herniated disk was suspected but not found on exploration of the fifth lumbar interspace; however, it was noted that on hyperextension the mobile lamina of the fifth lumbar vertebra rocked distally, causing traction on the first sacral nerve roots. For this reason the fifth lumbar lamina was excised and a lateral fusion was performed. The patient had considerable relief of the lower extremity pain. Shortly thereafter another patient with spondylolisthesis was seen, with sciatic radiation and with evidence of compression of the fifth lumbar root. On removal of the mobile lamina of the fifth lumbar vertebra, the fifth lumbar root was seen to be compressed by a mass of fibrocartilaginous tissue at the defect in the pars interarticularis of the fifth lumbar vertebra. After decompression of the roots by removal of the fibrocartilaginous mass, a lateral fusion was performed. There was immediate relief of the sciatic pain and of the neurological symptoms. A third patient with a similar condition was treated in an identical manner with relief. Meanwhile, in the second patient local back pain again developed, as well as coccygodynia and pain in the lower extremities associated with tightness in straight-leg raising. Reexploration showed that the bone grafts had slipped medially, causing formation of adhesions of bone to the dura. Because of this complication, and on the basis of limited experience with excision of the inferior articular processes without fusion in arthritic patients, it was decided that in the next patient a decompression procedure alone should be done and later, if necessary, a lateral fusion could be performed with greater safety. This operation was first performed on a physician in June, 1950. There was relief of the pain both in the back and in the lower extremities, and the patient resumed full activity in three weeks. Since then, in 18 cases surgery has consisted solely of removal of the loose lamina with complete decompression of the fifth lumbar and the first sacral roots. In five other cases, in which fusion operations had failed to result in either fusion or relief of symptoms, excision of the fusion mass and of the inferior articular process with decompression of the roots has given relief. In one other case, despite a conventional and solid fusion, the symptoms persisted until the fibrocartilaginous mass was removed. Surgical exploration consistently revealed the presence of a fibrocartilaginous mass at the defect in the pars interarticularis of the fifth lumbar vertebra; in some instances this was larger on one side than on the other, but it corresponded in general with the neurological findings. The authors show that their concept of the pathomechanics of this condition answers all that is not explained by the prevalent concept of instability at the lumbosacral junction.

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NEUROLOGY & PSYCHIATRY

Dihydroergotamine in Treatment of Trigeminal Neuralgia. K. Decker. Deutsche med. Wchnschr. **80:**887-889 (June 10) 1955 (In German) [Stuttgart, Germany].

While studies on the pathogenesis of trigeminal neuralgia, which the author carried out in 1948 and 1949, provided no new viewpoints, interesting therapeutic observations were made. The trigeminal pain disappeared or subsided in some patients while they were being treated with dihydroergotamine, but all attempts to elucidate the mode of action of this drug failed. When Simon in 1949, and Bodechtel in 1950, described favorable results with dihydroergotamine in trigeminal neuralgia, the author followed the further fate of his patients. Fifty patients who had been treated with dihydroergotamine could be reached in 1953 to 1954 for a follow-up inquiry. These patients had trigeminal neuralgia with typical attacks of tic douloureux. The ages of the 27 men and 23 women ranged from 40 to 75 years. At the onset of treatment the pain had existed for an average of four years, but all patients had been temporarily free from attacks, possibly as the result of treatment with vitamin B, with antirheumatic measures, or with roentgen irradiation; also foci of infection had been removed from the teeth or the sinuses; and removal of a branch of the nerve, coagulation of the ganglion or blockage of the sympathetic had been performed in some of the patients. The dihydroergotamine therapy was begun with 5 drops given three times daily and was increased by one drop given three times daily until the daily dose reached a maximum of 20 drops three times a day. Increase in dosage was stopped at levels at which the pain showed improvement, was continued at this level for from two to four weeks, and was then gradually reduced. Treatment was continued for an average of two months. The pains disappeared in 24 patients after the first treatment, but a year later only 10 patients were still free from pain, and after four or five years only four patients were still free from pain. The author concludes that about one third of the patients experienced prolonged relief from trigeminal neuralgia once or several times as the result of treatment with dihydroergotamine.

Results of BAL Therapy in Vascular and Inflammatory Neuropathies: Clinical Contribution on Twenty-Five Cases. G. Romualdi and L. Calabrese. Clin. terap. **8:**282-299 (March) 1955 (In Italian) [Rome, Italy].

BAL (2, 3-dimercaptopropanol) was used in the treatment of 4 patients with polyneuritis or neuritis of alcoholic, toxic, or diabetic nature, 14 with post-thrombotic encephalomalacia and cerebrospinal arteriosclerotic syndrome, 5 with encephalomyelitis, and one each with multiple sclerosis and chronic progressive external ophthalmoplegia of long standing. This is the first report in the world's literature on the use of BAL in the treatment of cerebral thrombosis and diffuse cerebrospinal arteriosclerosis. The drug was given in daily doses of 0.1 to 0.2 gm. for total doses ranging from 1 to 9.9 gm. in one or more courses of treatment. There were no side-effects, and the renal function and the blood picture were not altered. The conditions treated benefited regardless of whether the origin of the damage to the nervous cell was vascular or inflammatory. Complete resolution of the motor paralysis was obtained in three patients, and good results (without complete recovery) were obtained in one patient with polyneuritis or neuritis. The results were satisfactory in six and fair in four patients with post-thrombotic encephalomalacia and cerebrospinal arteriosclerosis, whereas the condition remained unchanged in four patients of this group. Of the five patients with encephalomyelitis, three improved and the improvement was still present 5, 6, and 18 months later respectively. One patient benefited slightly and one not at all. Improvement was still present in the patient with multiple sclerosis three years after the therapy was carried out. Ptosis diminished, and active motility of the eyelids became almost normal in the patient with the eye condition in whom all previous therapies had been of no avail. The improvement was still present after 90 days. Although spontaneous recovery is possible in all neurological conditions, there was evidence that BAL did influence the condition of most of these patients, acting if not as the determining factor at least as the factor that speeded up improvement and recovery. As a rule, the sooner the therapy was instituted after the onset of the condition, the better the results. It is suggested that BAL be combined with anticoagulant (heparin) therapy when used to treat cerebral thrombosis of recent onset.

Complications of Chlorpromazine Therapy in 800 Mental-Hospital Patients. J. Lomas, R. H. Boardman and M. Markowe. Lancet **1:**1144-1147 (June 4) 1955 [London, England].

This report is based on 800 patients, 260 men and 540 women, treated with chlorpromazine. The patients were not questioned about any untoward effects; hence any complications noted were either a result of spontaneous complaint by the patients or observed by the nurses and doctors. Though all types of mental disturbances were treated, the great majority of patients had acute or chronic psychoses. The dosage varied, but the most commonly adopted plan was to start with 150 mg. daily and to increase rapidly to 300 mg. daily. The less seriously disturbed patients received smaller doses, and a few patients had their dosage increased to 800 mg. daily. The duration of treatment varied from a few weeks to several months. The great majority of patients received the chlorpromazine orally and received ambulatory treatment from the start. A minority underwent electroconvulsion therapy concurrently, and most patients were receiving barbiturate sedation. No other form of therapy could account for the toxic reactions. The authors divide the complications into side-effects and toxic reactions. The side-effects were: tachycardia, hypotension, dryness of mouth, constipation, nausea, vomiting, frequency of micturition, Parkinsonian-like syndrome, and local irritation at the site of injection. Both subjective complaints and observed disturbances were much less common in disturbed psychotic patients than in others, and the more chronic the psychosis the less was the incidence of side-effects. Hypotension is the only one of the side-effects requiring special precautions and then only in the aged and those with cardiovascular dysfunction. Of the 59 toxic reactions (7.4% of the 800 patients), 48 occurred among the 540 women (8.9%) and only 11 among the 260 men (4.2%). The toxic manifestations were: jaundice, blood dyscrasias, skin reactions, edema, pyrexia, and epileptic fits. Jaundice and blood dyscrasias may prove fatal and are absolute contraindications to continuing treatment with chlorpromazine. Previous liver dysfunction may predispose to jaundice and therefore should also be regarded as a contraindication to such treatment. With the exception of epileptic fits, the time of occurrence of all toxic manifestations had a definite relationship to the duration of treatment but not to the dosage at the time or to the total dosage of chlorpromazine. In view of this finding and the occurrence of eosinophilia in some cases, the toxic reactions are probably due to sensitization. Epileptic fits occurred mainly in postleukotomy patients, and in only one case were no predisposing factors detected. Therefore chlorpromazine may have epileptogenic properties that may cause manifest fits in susceptible people.

Extracellular Hyperosmolarity After Cerebral Lesions. P. Anthonisen, T. Hilden and A. C. Thomsen. Nord. med. **53:**713-718 (May 5) 1955 (In Danish) [Stockholm, Sweden].

Attention is called to a symptom complex originating after cerebral injury and consisting of high serum values of chloride and sodium and slight elimination of these ions. The 46 cases of the syndrome published since 1937 are tabulated. The cerebral lesions are of widely different kinds including contusions, vascular catastrophes, tumors, encephalitis, postoperative sequels, insulin shock, and sulfathiazol intoxication. Most of the lesions in question are in the frontal lobes, hypophysis-hypothalamus region or both. The following hypothesis is set forth: A cerebral lesion of the osmoregulating mechanism causes dehydration, tending to a reduction of the organism's water content and reduction of the blood volume. This will stimulate the normal volume-regulatory mechanism of the organism and entail an active salt retention. Evaluation of the prognosis is difficult. The cerebral lesions in themselves have a high mortality. Of the 46 patients, 33 died, 11 survived, and the fate of two is not known. So powerful an electrolyte shifting as often occurs is believed to play an important part in the mortality. In the surviving pa-

tients the disturbance of osmoregulation seems as a rule to have been reversible. Besides the usual treatment of the different lesions and complications most authors have given abundant salt-free fluids. Treatment with a mercury diuretic tried by Persson in two instances apparently brought improvement in one. Some cases are possibly adapted for treatment with the artificial kidney.

GYNECOLOGY & OBSTETRICS

The Stein-Leventhal Syndrome. I. F. Stein. West. J. Surg. **63:** 319-323 (June) 1955 [Portland, Ore.].

Secondary amenorrhea, a male type of hirsutism, sterility, hypoplasia of the uterus, and bilaterally enlarged, symmetrical ovaries are the signs and symptoms most consistently found in patients presenting the Stein-Leventhal syndrome (bilateral polycystic ovaries and sterility). This syndrome, which occurs in both married and single women, mostly between the ages of 17 and 30, is apparently endocrine in origin, although its exact cause is still unknown. Pregnancy may occur in the married women during the evolutionary phase of the syndrome, before the ovaries have become completely polycystic, but with this rare exception sterility is the rule. A presumptive diagnosis can often be made on the basis of the history alone in typical cases, in which normal puberty and early adolescence with either regular or irregular cycles are succeeded after a few years by periods of amenorrhea that become progressively longer; in a great many cases the amenorrhea becomes absolute. The presumptive diagnosis can be substantiated in about 50% of the cases by the routine bimanual examination (rectal examination in single girls). Gynecography (pneumoroentgenography), which usually obviates the need for exploratory laparotomy, should be used to establish the diagnosis in cases in which the results of bimanual examination are inconclusive. Bilateral ovarian wedge resection, which is extremely simple and can be done through a Pfannenstiel incision in less than 30 minutes, is the treatment of choice for patients with this condition. Ovulation usually occurs spontaneously after the operation, and there is no indication for routine postoperative endocrine or x-ray therapy. Sterility was successfully relieved by this procedure in 57 (89%) of 64 married patients complaining of infertility: they have had a total of 120 pregnancies with 97 live births (four sets of twins) and six patients undelivered.

Indications for Hysterectomy. W. P. Hutcherson and A. H. Bullard. J. Tennessee M. A. **48:**219-225 (June) 1955 [Nashville, Tenn.].

The authors review 205 hysterectomies, which they performed between 1951 and 1954. They believe that the surgeon should be equally proficient in the abdominal and vaginal approach. Total abdominal hysterectomies were performed in 104 patients, vaginal hysterectomies in 93, and subtotal abdominal hysterectomies in 8 patients. In the age group between 20 and 39 abdominal hysterectomy was most frequently performed, because it is indicated for lesions that are most frequently found in this age group such as fibromyomas, ovarian tumors, pelvic inflammatory disease, and endometriosis. Between the ages of 40 and 59 abdominal and vaginal hysterectomies were performed with about equal frequency, and from ages 60 to 69 vaginal hysterectomies were performed more frequently, because in women of these ages relaxation due to childbirth is the most frequent indication for hysterectomy. Of the 104 women who were subjected to abdominal hysterectomy, 52 had abnormal bleeding; in 25 of these, curettages were performed prior to hysterectomy, and seven malignant lesions were found. Curettement was performed in 21 others at the time of hysterectomy, but no malignant tumor was found. Of the 93 women subjected to vaginal hysterectomy 44 had abnormal bleeding. Previous curettages had been performed in 14 patients, revealing adenocarcinoma of the endometrium in one. Sixty-seven curettements were performed at the time of the vaginal hysterectomies. Hysterectomy seems to be the only treatment for patients with uncontrolled dysfunctional bleeding and incapacitating dysmenorrhea if childbearing need not be considered. Among the gynecologic indications for abdominal hysterectomy, fibromyoma topped the list, accounting for 48 of the 104 cases. Other indications of uterine origin were adenomyosis, dysfunctional bleeding, adenocarcinoma of endometrium, carcinoma in situ of the cervix, and invasive carcinoma of the cervix. Forty of the 93 vaginal hysterectomies were performed for repair and other disease, and 35 were performed primarily for relaxation due to childbirth, that is, cystocele, rectocele, and prolapse of varying degrees. Thus 80.6% of the vaginal hysterectomies included anterior and posterior repair, whereas only six (or 5.8%) of the abdominal operations were accompanied by reparative measures. No deaths resulted in the 205 hysterectomies, but a few minor complications such as cystitis, cuff infections, and temperature elevations of undetermined origin occurred.

Methylandrostenediol in Treatment of Sexual Frigidity in Women. A. Migliavacca. Riv. ostet. e ginec. prat. **37:**65-69 (Feb.) 1955 (In Italian) [Milan, Italy].

Methylandrostenediol was used in the treatment of 27 frigid women. It was employed instead of testosterone because its virilizing activity is almost negligible. The doses that in testosterone therapy gave good results—three 100 mg. injections at two to three day intervals after the menstrual period—were not effective with this drug. Good results were obtained in 14 of these patients when the dose was increased threefold. Despite the administration of this large quantity, hirsutism, voice changes, and hypertrophy of the clitoris were not observed. A soft hair appeared on both forearms of one patient who had received 600 mg. of the drug, but it disappeared spontaneously after three months. In all of the patients the anabolic action of the drug was already evident 15 days after the therapy was started, and weight gains ranged from 1.7 to 4.3 kg. The menstruations remained unchanged except for three patients in whom the menses had a tendency to diminish in quantity. Euphoria and a greater psychodynamic activity was experienced by the patients, and some vague neurovegetative disturbances of unknown origin were also favorably influenced. The relatively poor aphrodisiac action of methylandrostenediol with respect to that of testosterone is in part compensated by the fact that larger doses of the former can be used without the onset of virilizing side-effects. The drug is indicated in the treatment of female sexual frigidity when testosterone therapy has failed or when the eventual risk of its virilizing effects is to be avoided.

The Present Status of Human Male Infertility. J. MacLeod. Am. J. Obst. & Gynec. **69:**1256-1267 (June) 1955 [St. Louis].

In the past decade several studies on semen quality in apparently normal men and in cases of infertility have provided a more rigid definition of male infertility. The author believes that the range of normal male fertility is much wider than has been supposed and that the sperm count per se is not the most important factor. The figure of 20 million cells per cubic centimeter is suggested as the lower level of male fertility. The potential of male fertility above a certain level of sperm count is not related to rising counts. There is a close relationship between quality of sperm motility and fertility potential. The motility of the spermatozoa may be considered as a compensating factor in the presence of a low sperm count. When discharged directly into a receptacle and examined immediately, the seminal fluid is a coagulum in the meshes of which the spermatozoa are immobile. There is debate as to whether the nonmotile state of the spermatozoa at this stage is physical in the sense that they are unable to move against the great viscosity of the coagulated seminal fluid or whether they lacked motility at the moment they were projected into mixture with the fluids of the seminal vesicles and prostate. The visual evidence is in favor of already motile cells being inactivated by the physical state of their new environment. When the coagulum is examined microscopically during the early stages of liquefaction, two distinct phases can be seen, one in which the spermatozoa are immobilized in the coagulum but show vigorous tail movement, and the other a fluid or liquefied phase in which, now free, they show vigorous, progressive activity. Another important aspect of seminal quality at the time of ejaculation is that most of the spermatozoa are expelled in the first third of the ejaculate. Since we are accustomed to thinking of the efficacy of the sperm count in terms

of count per unit and not total count, the importance of this massing of the spermatozoa in a relatively small forward portion of the ejaculate may have significance. The passage of the spermatozoa from the male to the female genital tract under physiological conditions is a rapid process and probably depends on the concentration per unit volume of spermatozoa in the first portion of the ejaculate and may be limited by the resistance of the cervical mucus.

Fractures Resulting from Eclamptic Convulsions: Review of Literature, Case Reports, and Medicolegal Implications. J. R. Reinberger and W. F. Mackey. Am. J. Obst. & Gynec. **69:**1167-1173 (June) 1955 [St. Louis].

Reports on eight cases of fractures resulting from eclamptic convulsions were found in the literature. The authors describe a case of their own, in which convulsions during postpartum eclampsia resulted in a fracture of the neck of the humerus and slight compression of the body of the eighth thoracic vertebra. This patient instituted suit for neglect, charging that the eclamptic convulsions and fractures should have been prevented by proper medical supervision. Judgment was rendered against the defendant, but was reversed in a higher court. Eclampsia cannot be prevented in certain patients, and this patient had no symptoms indicating that postpartum eclampsia would occur. Questionnaires were sent to 70 medical schools in the United States inquiring about fractures due to eclamptic convulsions that had not been reported in the literature. Replies were received to 39 of these questionnaires. A total of 1,479 cases of eclampsia was observed at these 39 institutions over a period of 10 years, and two fractures due to eclamptic convulsions and two dislocated jaws were observed. The authors conclude that fractures are one of the rarest and least known complications resulting from eclampsia. They are similar to those found after convulsive therapy. These fractures are most common in patients with postpartum eclampsia and are chiefly those of the long bones and of the vertebral column. All patients who have had eclamptic convulsions should have a complete radiological examination before leaving the hospital, to be repeated in four weeks if any symptoms compatible with bone injury appear. For medicolegal reasons, this x-ray examination should be carried out before discharge from the hospital. All pregnant patients who present themselves to the obstetrician in the last four weeks of gestation should receive careful supervision on account of possible concealed toxemia, which might result in eclamptic convulsions and thereby give rise to medicolegal disputes.

Incidence of Prematurity in Relation to Maternal Nutrition. P. C. Jeans, M. B. Smith and G. Stearns. J. Am. Dietet. A. **31:**576-581 (June) 1955 [Chicago].

The dietary habits of 404 pregnant women of low income, living in a predominantly rural midwestern state, were investigated. The present report concerns the incidence of prematurity in the infants born to these women, in relation to the maternal diets. Few of the women had had prenatal care or advice. They were admitted to the obstetric ward of the University Hospital about two weeks before delivery. The infants were considered prematurely born if the birth weight was less than 2,500 gm. (less than 5.5 lb.). The dietary patterns of the mothers showed a consistently high intake of white bread and potatoes. Milk intake was surprisingly low, especially so for a dairy state, and both the variety and the quantity of fruits and vegetables eaten were limited. In addition to potatoes, only carrots, apples, and tomatoes were eaten with any frequency. The meat intake tended to follow the financial status. Maternal diets were especially deficient in calcium and protein. Enrichment of bread and flour prevented severely deficient intakes of iron, thiamine, and riboflavin in many women. Potatoes were the chief source of ascorbic acid. Tomatoes and carrots provided ample carotenoids. Caloric overindulgence was far more common than inadequacy of caloric intake; the latter, when it occurred, was usually because of persistent nausea and vomiting. Obesity was common, even in the women under 30 years of age. Frequently, diets that were adequate in a majority of the 10 nutrients studied achieved that status only because the quantities of the chosen foods eaten were excessive. The mothers were divided into five groups according to their protein intakes. Group 1 received 85 gm. or more of protein daily; group 2, 70 to 85 gm.; group 3, 60 to 70 gm.; group 4, 50 to 60 gm.; and group 5, less than 50 gm. It was found that lowest birth weights, low vitality, and large numbers of deaths in the newborn infants occurred among those born to the most poorly nourished mothers. The incidence of prematurity rose sharply with the decrease in the nutritional status of the mother. Among the better-nourished women, premature delivery tended to be associated with frequency and total number of pregnancies and with multiple birth. Among the less well nourished, the incidence of prematurity showed less relationship to number or frequency of pregnancies.

Vaginal and Urinary Cytology in Threatening Abortion and in Abortion. F. Gagliardi and A. Cortella. Riv. ostet. e ginec. prat. **37:**95-108 (Feb.) 1955 (In Italian) [Milan, Italy].

Vaginal and urinary sediment smears were studied in 22 cases of threatening abortion, 10 of which could not be prevented, and, before the rupture of the pregnant tube, in 2 cases of extrauterine abortion. Besides the qualitative evaluation of the cells, the acidophilic and karyopycnotic cell levels of both smears were studied and the qualitative estrogen level was deduced from them. Although there was, from the morphological standpoint, a certain parallelism between the two smears, the number of acidophil and karyopycnotic cells in the urinary smear was always lower than that in the vaginal smear. The vaginal smear technique gives a more reliable prognosis in threatening abortion than does the urinary sediment smear technique. The difference between the smears of patients in whom abortion could not and those of patients in whom abortion could be prevented was qualitative rather than quantitative. As a rule, the presence of decidual-like cells or of the postabortion-type cell with a decrease or disappearance of intermediate cells, the presence of perinuclear vacuoles accompanied by a high estrogen level indicate unfavorable prognosis, although in some cases of unavoidable abortion the findings may be almost normal. The so-called pregnancy cells are scarce and almost entirely missing from the smears of patients in whom the abortion cannot be prevented. The authors state that the vaginal smear study should be preferred to that of the urinary sediment smear. This may be useful in cases in which the vaginal smear cannot be obtained because of a great loss of blood or because other factors are present. No conclusion is drawn on the two cases of extrauterine pregnancy.

Accumulation of Radioactive Iodine by Human Fetal Thyroids. R. E. Hodges, T. C. Evans, J. T. Bradbury and W. C. Keettel. J. Clin. Endocrinol. **15:**661-667 (June) 1955 [Springfield, Ill.].

The thyroid glands of fetuses from nine women in whom therapeutic abortion was induced were examined for radioactive iodine (I^{131}) content. The mothers had each been given 500 μc. of I^{131} about 24 hours prior to operation. The presumed ages of the fetuses ranged from 6½ to 15 weeks. It was found that the human fetal thyroid has the ability to accumulate demonstrable amounts of I^{131} by the 12th week of gestation. It is a matter for conjecture whether this accumulation of iodine is enough to warrant prohibition of radioactive iodine therapy of maternal thyrotoxicosis. A thyrotoxic mother was given a therapeutic dose of I^{131} at a stage of pregnancy when the fetus presumably could accumulate iodine, and she was delivered of a normal baby near term. One year later the child was normal in height and weight and was in good health. Other such cases have been reported. The lack of fetal thyroid damage may be due to the fact that the quantity of I^{131} was insufficient to be harmful. In the present series the uptake was demonstrable only by radioautograph. Furthermore, in thyrotoxicosis the maternal thyroid has a much greater affinity for iodine and hence might reduce the amount available to the fetus. In the present study the maternal uptake was 69% in the thyrotoxic patient as compared with 22 to 46% (average 30%) in the euthyroid women. It is also possible that the concentration of circulating thyroxine is elevated in thyrotoxicosis and, according to Peterson, thyroxine can readily pass the placental barrier, thus depressing fetal uptake of radioiodine. Further studies are needed to determine the amount of radioiodine accumulated at any given age by the human fetus and the sensitivity of the fetal thyroid to irradiation.

PEDIATRICS

Mucoproteins in Rheumatic Disease of Infancy. B. Fantuzzi and C. Neuhaus. Minerva pediat. **7**:478-481 (April 14) 1955 (In Italian) [Turin, Italy].

The serum mucoprotein concentration was studied in 8 healthy children, 8 children with various febrile conditions, and 13 children with rheumatic disease. In all of these except one, the mucoprotein determination, which was made the first time at the onset of the condition before commencing therapy, was repeated from two to five times at intervals of 10 to 15 days. Therapy consisted in the oral administration of aminopyrine (Pyramidon) alternating with that of salicylate, which was also given rectally. The serum mucoprotein level varied from 4.3 to 7.8 mg. per 100 cc. in the healthy children. In those with rheumatic disease, it was markedly increased, varying from 9.8 to 15.3 mg. per 100 cc. The erythrocyte sedimentation rate was increased in 10 of these children, and, generally, the higher the serum mucoprotein level, the higher the sedimentation rate; this ratio was not constant, however. The serum mucoprotein level did not differ markedly in the children with and those without cardiac involvement. As the children improved, the sedimentation rate gradually dropped to normal values. The mucoprotein level also decreased progressively, but at a much slower rate. In the eight children with nonrheumatic febrile conditions in whom the sedimentation rate was increased, the serum mucoprotein concentration, although higher than normal, did not reach the values that were found in the children with rheumatic disease. The mucoprotein level in the serum proved to be a more sensitive, and therefore a more reliable, indicator of the disease's activity than the sedimentation rate. The authors state that this laboratory test, which is easy to perform, may well become a valuable diagnostic and prognostic tool in some febrile conditions of infancy.

Cyclic Vomiting as a Form of Epilepsy in Children. J. G. Millichap, C. T. Lombroso and W. G. Lennox. Pediatrics **15**:705-714 (June) 1955 [Springfield, Ill.].

Thirty-three children in whom a diagnosis of cyclic or periodic vomiting was made did not present evidence of intrinsic disease of the abdominal or other viscera, and the cause of the symptoms had not been determined. They were then studied for evidence of a cerebral origin of the recurrent, paroxysmal autonomic symptoms. In addition to cyclic vomiting, seven of the children had a history of grand mal or psychomotor seizures, two had experienced a convulsion in early life, and five had occasional loss of consciousness either with or apart from the period of vomiting. The clinical features of patients with uncomplicated cyclic vomiting and of those with associated grand mal or psychomotor seizures were similar. The vomiting was periodic in type and of prolonged duration. It was associated with ketosis and frequently with dehydration. The average age at onset of the periodic symptoms was four years. Abdominal pain occurred in about half the patients. Abdominal epilepsy or abdominal migraine replaced the cyclic vomiting in seven patients and migraine headaches supervened in five, in all 36% of the patients. Nine children had a history of eczema, asthma, or hay fever. Behavior disorders were present in 11 children (33%), 4 of whom were mentally retarded. Other episodic symptoms, in order of frequency, were: fever, constipation, diarrhea, paresthesia, enuresis, tetany, visual disturbance, rash, and joint pain. The electroencephalograms of all patients were in some respect abnormal. Evidence of damage to the brain was definite in 14 children (42%), and suggestive in 6. Six had been born prematurely; 9, and possibly 13, had experienced head trauma or anoxia at birth; 7 had a history of postnatal trauma, associated in 3 with unconsciousness; and 5 had a history of a severe infection (measles, postvaccinal encephalitis, meningitis, or pneumonia) that preceded the onset of cyclic vomiting. Fourteen of the patients without history of convulsions or psychomotor seizures were given regular doses of the anticonvulsants Dilantin, phenobarbital, or Mysoline. Dilantin proved the most effective in the prevention of attacks, while tablets or suppositories of ergotamine tartrate with caffeine were useful in their alleviation. On the basis of all these findings, all 33 children could, in the authors' opinion, qualify for a diagnosis of autonomic epilepsy.

The Pulmonary Manifestations of Fibrocystic Disease of the Pancreas. P. A. di Sant'Agnese. Dis. Chest **27**:654-667 (June) 1955 [Chicago].

Between 1939 and 1954, cystic fibrosis of the pancreas, a generalized hereditary disease of children in which the pancreas, the lungs, the sweat glands, and frequently the liver are affected, was observed by the author in 291 children. Only 21 were hospitalized in the first five years, but 270 were admitted to hospital in the last decade of the period studied. This increased incidence is a reflection both of greater recognition of the disease and of the advent of effective antibiotics, which greatly prolong the life span. The basic nature of the disease is not known, but it is probable that all exocrine glands are affected in this condition. A variable degree of bronchial and pulmonary involvement is a virtually constant feature of the disease, usually dominates the clinical findings, and determines the fate of the patient. Cystic fibrosis of the pancreas is the commonest cause of chronic nontuberculous pulmonary disease in the pediatric age group. Cystic fibrosis of the pancreas differs from other diseases of the lungs in that the basic phenomenon leading to respiratory involvement is a mechanical one, i. e., failure to remove bronchial mucus, which perhaps is abnormal in its physicochemical characteristics. This results in widespread and severe bronchial obstruction and predisposes the patients to secondary infection. Bronchial obstruction may thus be considered as the primary and cardinal manifestation of the pulmonary component of fibrocystic disease of the pancreas. The causative agent is usually Micrococcus (Staphylococcus) pyogenes var. aureus. Of the 291 children with this disease, 133 died. Of those still living, 29 were between the ages of 10 and 18 years; some of them were doing well. Early diagnosis and administration of antibiotics such as penicillin and streptomycin and of the broad spectrum antibiotics, such as oxytetracycline, chlortetracycline, and tetracycline, before the respiratory infection causes permanent damage to the bronchi, in addition to a high-protein, low-fat diet with adequate amounts of the liposoluble vitamins, added pancreatic extracts, and liberal amounts of salt in hot weather, offer the best hope of tiding these patients over into late childhood when the manifestations of this disorder seem to become milder.

Isoniazid in Tuberculous Peritonitis of Childhood. H. Shukry and S. Awwaad. A. M. A. Am. J. Dis. Child. **89**:685-688 (June) 1955 [Chicago].

Fifteen children with different types of tuberculous peritonitis were collected from the outpatient department of the Children's Hospital at Abbassia, Egypt, and were hospitalized for treatment with isoniazid. The children ranged in age from 3 to 9 years. Seven patients had the ascitic form of tuberculous peritonitis, 7 had the fibrocaseous type, and one child had tabes mesenterica (tuberculosis of the mesenteric glands). Some of those with the ascitic and the fibrocaseous types also had tuberculosis of the mesenteric glands. Isoniazid was used also in three children of one family, in whom abscesses had developed at the site of BCG vaccination with draining sinuses and regional lymphadenitis. In the first 10 of the peritonitis patients isoniazid was given in daily doses of 5 mg. per kilogram of body weight, in the other 5 the dose was raised to 10 mg. per kilogram of weight. Treatment with isoniazid was continued for from 6 to 10 weeks, and in some children *p*-aminosalicylic acid was given after the 10th week. Complete rest, good diet and tonics were employed in addition to the isoniazid therapy. Twelve of the 15 patients with tuberculous peritonitis, including all those with tuberculous ascites and tuberculosis of the mesenteric glands, were cured, and no recurrences were observed in a follow-up period of 10 to 20 months. Of the seven patients with the fibrocaseous type of tuberculous peritonitis, four were cured within six to eight weeks and the other three showed great improvement. Fever when present subsided within one week, and the erythrocyte sedimentation rate showed a progressive decline, reaching normal or very near-normal levels by the end of treatment. The body weight showed an increase in 13 cases and remained stationary in the other two. Associated extra-abdominal tuberculosis was also very favorably influenced with isoniazid, but in one patient cervical lymphadenitis with sinuses recurred

after six months. The dramatic healing of the local complications following BCG vaccination gives a new indication for isoniazid therapy. The fear of local complication need no longer deter BCG vaccination. Neither the low nor the higher doses of isoniazid caused toxic reactions; however, no significant improvement in the clinical condition was induced by the high dosage to recommend its application.

Hemodialysis of the Uremic Child. F. M. Mateer, L. Greenman and T. S. Danowski. A. M. A. Am. J. Dis. Child. **89:**645-655 (June) 1955 [Chicago].

The report is concerned with extracorporeal hemodialysis, which was used eight times in five children. In all instances an artificial kidney of a modified Alwall type was used. This machine consists of three stainless steel screens that hold a flattened 50 ft. (15.2 m.) length of 1⅛ in. (2.9 cm.) cellophane tubing in a 32 liter bath that is thermostatically controlled. Heparinized blood (3 to 5 mg. heparin per kilogram body weight intravenously) from the patient's radial artery flows through connections of nonwetting plastic tubing to a roller pump, through the cellophane tubing, again through the pump, and back to the patient's saphenous vein by way of a bubble trap and clot catcher. The dialyzing bath had the following composition: sodium 142 mEq. per liter, calcium 7 mg. per 100 ml., chloride 107 mEq. per liter, bicarbonate 37 mEq. per liter, glucose 255 mg. per 100 ml., and, when indicated, potassium 4 mEq. per liter. The patients ranged in age from 7 to 15 years. All patients were either stuporous or confused. During dialysis, which lasted from 109 to 793 minutes, the patients became more alert. Temperature, pulse rate, and blood pressure changed little in this period. Minor fluctuations in blood pressure in the third dialysis of one of the patients were readily corrected by addition of blood from the reservoir. Respiration in the three patients who were overbreathing became normal. Pulmonary edema, which existed in one patient, diminished. Urine flow, which was present only in two prior to application of the artificial kidney, continued during dialysis. Increased amounts of sedation were needed in one patient to control the convulsive seizures during dialysis. Three of the patients died. Two patients, one with acute tubular necrosis, a second with chronic glomerulonephritis, are living seven months after dialysis, the first with normal renal function. Indications for hemodialysis in uremic patients include anuria of five or more days' duration, potassium intoxication, pulmonary edema, intractable acidosis, and hyponatremia. Severe hemorrhage is the only contraindication. In view of the difficulty in assessing elements of reversibility of renal failure in chronic states, more frequent use of dialysis is indicated in these situations.

DERMATOLOGY

A New Treatment for Seborrheic Dermatitis: A Clinical Investigation. F. I. Ball. A. M. A. Arch. Dermat. **71:**696-698 (June) 1955 [Chicago].

Vancide-benzethonium solution was used to treat 98 patients with seborrheic dermatitis. Vancide 89 (N-trichloromethylmercapto-4-cyclohexane-1,2-dicarboximide) has been used in the agricultural chemical field as a fungicide, where it is known as Captan. In order to make this compound readily usable by human subjects, it was incorporated into an aqueous alcoholic lotion. This lotion referred to as Solution 105-6, contains, in addition to 0.085% of Vancide 89, 0.060% of benzethonium (Phemerol), which was added to broaden the bactericidal scope of the preparation. Of the 98 patients treated, the disease was classified as severe in 28, moderate in 52, and mild in 18. Of the 28 with severe disease, 20 were completely controlled, 6 were improved, and 2 unimproved. Of the 52 with moderate disease, 39 were completely controlled and 12 were improved; in one an allergic reaction occurred. Of the 18 with mild disease 15 completely cleared up, 2 were improved, and one failed to show any appreciable improvement. The 98 patients included 6 with atopic dermatitis and 10 with acne vulgaris, in all of whom the seborrhea of the scalp was brought under control. Four patients with the so-called "cradle-cap" type of seborrheic dermatitis were completely controlled. Eight patients with otitis externa were treated. The condition in four was completely controlled, but the others were not improved. No increased oiliness of the scalp was noted at any time following the use of this medication. It did not discolor gray or light-colored hair.

Treatment of Chronic Lupus Erythematosus with Atabrine and Chloroquine. R. B. Stoughton. Illinois M. J. **107:**299-301 (June) 1955 [Chicago].

Chloroquine was used in 25, and quinacrine (atabrine) in 18 patients with chronic lupus erythematosus. Half of the patients receiving chloroquine showed definite improvement, while the others experienced little or no improvement. Twenty-three of these 25 patients had already received treatment with other drugs, such as gold, bismuth, pantothenates, vitamin E, or carbon dioxide, without significant change in the lesions. It was most impressive when a chronic discoid patch of lupus erythematosus, after years of resistance to all treatment, suddenly underwent resolution when chloroquine or quinacrine were administered. After these drugs were discontinued, many patients relapsed to their former status, but readministration again resulted in a favorable response in most cases. Chloroquine is preferable to quinacrine, because it is less toxic, does not stain the skin yellow, and is at least as effective in therapy. Maintenance doses may have to be given to the majority of patients in order to prevent recurrences. From his own experience and from various reported studies, the author deduces that for the average adult with chronic lupus erythematosus an initial dose of 750 mg. of chloroquine can be given for 10 to 14 days and can be succeeded by 250 to 500 mg. per day for an indefinite period.

Chlorquinaldol (Sterosan) in Dermatologic Therapy. J. C. Murphy. Rocky Mountain M. J. **52:**530-532 (June) 1955 [Denver].

Chlorquinaldol (Sterosan) is a recent addition to the oxyquinoline derivatives. A series of 124 patients with a variety of pyogenic and eczematous dermatoses were treated either with 3% chlorquinaldol in an ointment base containing petrolatum and lanolin, or with 3% chlorquinaldol in a vanishing cream base. The preparation was given to patients in 1-oz. tubes or jars with directions that it be applied generously to the affected skin areas at least twice a day. A soft cotton-cloth dressing was advised in most cases. For patients with pyogenic disorders, cleansing twice daily with mild soap and water was directed. For eczematous and pruritic lesions, soap was forbidden, but gentle cleansing with a bland vegetable oil was permitted, when necessary. If additional therapy was used, a clinically comparable case was selected for treatment with chlorquinaldol alone. Treatment was discontinued after seven days in a few patients, in whom no response was elicited or who experienced irritation. When possible, "paired comparison" tests were used, a different topical medication (e. g., tar, antibiotic, or antipruritic) being used on the opposite side. Eczematous disorders existed in 89 of the 124 patients and included among others dyshidrosis, housewives' eczema, nummular eczema, and infantile eczema. A second group of 17 patients had disorders with an infectious component such as pyoderma (including impetigo), paronychia, furunculosis, balanitis, external otitis, and intertrigo. The third group comprised 18 patients with miscellaneous disorders such as lichen simplex, burns, dermatitis venenata, dermatitis or ulcer due to stasis, flexural neurodermatitis, and seborrheic dermatitis. Clearing or great improvement of the lesions was noted in 87.1% of all patients. There was improvement without cure in an additional 6.5%, and no change in 4%. Three patients with irritation were observed (2.4%), but there was no instance of sensitization.

Effect of Reserpine in Certain Dermatological Conditions. V. Panaccio. Union méd. Canada **84:**672-674 (June) 1955 (In French) [Montreal, Canada].

Reserpine (Serpasil) was administered to 28 patients with dermatological conditions in which psychic factors were prominent. Excellent results were achieved in 9 of 15 patients with psoriasis with 0.25 mg. of reserpine given three times a day,

but follow-up has not been long enough to prove whether these results are permanent. The four patients with urticaria and the two with lichen planus were remarkably benefited; the action of the drug in these diseases was much more rapid than in psoriasis. In the six patients with chronic eczema, results were practically nil except in one patient, who is maintained in the asymptomatic state by 0.25 mg. of reserpine three times a day; symptoms recur immediately the drug is withheld. The one patient with prurigo also used reserpine as maintenance therapy. The commonest side-effects of reserpine administration are nasal congestion, somnolence, nightmares, and weight gain. One patient had nocturnal tremor with chattering of the teeth. These effects disappeared either with the passage of time or on the reduction of dosage from 0.5 to 0.25 mg. three times a day. The author noted two previously unreported reactions to reserpine: generalized eczematous dermatitis and asthmatiform paroxysm with facial edema and congestion. A patient who was receiving 5 mg. a day of the drug manifested a Parkinsonian syndrome (paralysis agitans) with hand tremor at rest and hypersalivation. Discontinuation of reserpine therapy caused the disorder to disappear.

UROLOGY

Clinical Application of Hemostasis with Muscular Tissue in Nephrotomy: Late Results in Twelve Cases. A. Acquati. Gior. ital. chir. **11**:425-439 (May) 1955 (In Italian) [Naples, Italy].

Acquati reports the results obtained in 12 patients in whom nephrotomy was performed and in whom, for hemostatic purposes, a strip of muscular tissue secured from the lumbar incision was placed into the operative wound and sutured. Nephrotomy was done in most of the patients to remove stones from the calices; in a few patients with so-called essential hematuria, it was merely an exploratory operation. The placing of the graft into the wound makes it possible to reduce the number of sutures and aims at obtaining good hemostasis and preventing parenchymal hemorrhages. The hemostatic effect is due partly to tamponing of the vessels and partly to the biological action of the muscular tissue. Parenchymal hemorrhages never occurred in these patients. A macroscopic hematuria was seen in some of them in the immediate postoperative days, but it was never severe, lasted six to eight days, and disappeared gradually in a few days. The presence of the muscular tissue in the wound did not interfere with the process of recovery and did not cause side-effects. Tests performed in the immediate postoperative course and again before the patients were discharged revealed prompt and complete restoration of renal function. This was still present several years later, thus indicating that the functional structure of the renal parenchyma was only slightly impaired by the connective tissue, which slowly replaced the grafted muscular tissue that underwent necrosis. Calcium formation in the parenchyma or the excretory cavities was not evident in the roentgenograms. It was possible to make histological studies of one of these kidneys that was removed two months after the nephrotomy because of pyelonephrosis. They revealed that the recovery process in the wound was good with minimal impairment of the parenchyma. No regenerative attempt on the part of the grafted muscular tissue was apparent, and calcification process was not present in the renal parenchyma.

Study of Renal Function by Means of Clearance of p-Aminohippuric Acid and Mannitol. A. Conti and C. Danese. Minerva nefrol. **2**:23-28 (Jan.-March) 1955 (In Italian) [Turin, Italy].

The method used by the authors to study the renal function by means of the clearances of *p*-aminohippuric acid and mannitol is presented. After a 12-hour period of fast and rest and one hour before commencing the test, the patient is given 500 to 700 cc. of water, and 10 cc. of blood are withdrawn for the hematocrit determination of the so-called white plasma corpuscles, namely, of those substances that interfere with the assay of mannitol because they have the same chromatic reaction. Then *p*-aminohippuric acid and mannitol are administered either in a single injection or by continuous perfusion. When the first mode of administration is used, 6 to 8 cc. of a 20% solution of *p*-aminohippuric acid and 50 cc. of a 20% solution of mannitol are injected over a 10-minute period. Fifteen minutes after the injection was started, the bladder is emptied (with the patient standing, if possible) by introducing a catheter, which is left in situ. At the 20th minute, and then again at the 30th minute, 10 cc. of blood are withdrawn; at the 25th minute, and then again at the 35th minute, the bladder is emptied and washed with 50 cc. of isotonic sodium chloride solution, and both the urine and the lavage solution are collected. When the substances are administered by the continuous perfusion method, 3 to 4 cc. of a 20% solution of *p*-aminohippuric acid and 50 cc. of a 20% solution of mannitol are given slowly. This is followed by the perfusion of an isotonic sodium chloride solution containing *p*-aminohippuric acid in a 0.5% ratio and mannitol in a 2% ratio. The blood and the urine are collected in the same manner as in the previous method. To estimate the tubular excretory capacity, the authors inject very slowly 50 to 80 cc. of a 20% solution of *p*-aminohippuric acid. At the 10th minute, and then again at the 40th minute, the bladder is emptied and washed and the urine and lavage solution are collected; at the 25th minute, 10 cc. of blood are withdrawn. Hamburger's technique is followed for the blood and urine assay of mannitol and *p*-aminohippuric acid, and the photometric determination of the two substances is made with Lietz's apparatus. The authors used the above methods to study the renal clearances of the two substances in patients in whom there were no alterations of the cardiovascular and uropoietic systems. They found that (1) with the continuous perfusion method of administration the glomerular filtrate fluctuated between 110 and 135 cc. per minute and the renal plasma flow between 560 and 820 cc. per minute; (2) with the single injection method the glomerular filtrate ranged from 105 to 140 cc. per minute and the renal plasma flow from 570 to 750 cc. per minute; and (3) the *p*-aminohippuric acid tubular excretory capacity was of 81 to 88 mg. per minute.

The Present Status of Renal Angiography. E. W. Riches. Brit. J. Surg. **42**:462-470 (March) 1955 [Bristol, England].

Riches says that the use of organic iodine preparations instead of sodium iodide has abolished nearly all the dangers of renal angiography. Diodone, 70%, has been used in more than 200 patients at Middlesex Hospital. There are two routes of approach to the abdominal aorta for angiography, the lumbar and the femoral. After a trial of both methods the author favors the lumbar route as being easier, quicker, and less prone to failure or complications. The femoral route is indicated if an aortic aneurysm is suspected. The general effects of injecting 30 ml. or even 60 ml. of diodone 70% rapidly into the circulation must be foreseen. Some patients are sensitive to iodine, and before doing an excretion pyelogram a sensitivity test should be done with a small amount of diodone. When this work was started, the author considered that the main indication for an aortogram was when one kidney failed to function on excretion urography and its ureter could not be catheterized for the purpose of a retrograde pyelogram. That is still an important general indication, but the scope of the investigation has been widened. The first 100 patients in whom the author employed renal angiography included 21 with renal new growths, 18 with hydronephrosis and hydrocalicosis (localized dilatation of a calix), 15 with renal cysts, 14 with congenital anomalies, 12 with hematuria or pain, 9 with tuberculosis, 7 with nontuberculous inflammation, and 4 with calculous disease. Renal angiography is a safe procedure, and the technique can be mastered fairly easily. It can be done in any general hospital that has a good diagnostic x-ray department. It is an essential part of the investigation of a space-occupying lesion in the kidney, of hydronephrosis, of congenital anomalies, and of any condition for which partial nephrectomy is contemplated. It is often desirable in suspected renal hypertension. The contraindications to its use are iodine sensitivity and uremia. Its scope will be increased by improvements in film-changing mechanisms and in x-ray technique generally. It does not replace the standard well-tried urological investigations, but is complementary to them.

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BOOK REVIEWS

Diseases of the Thyroid Gland. By Samuel L. Gargill, M.D., Assistant Clinical Professor of Medicine, Harvard Medical School, Boston, and Mark Falcon Lesses, M.D., Instructor in Medicine, Harvard Medical School. (Reprinted from Oxford Loose-Leaf Medicine with same page numbers as in that work) Cloth. $12. Pp. 839-964 (375). Oxford University Press, 114 Fifth Ave., New York 11, 1955.

The authors have given a comprehensive and well-written résumé of the present status of thyroid disorders. All aspects of the subject are covered comprehensively with an adequate presentation of the underlying physiological facts essential for an understanding of the modern management of these diseases. The authors present their material clearly and succinctly with well-selected illustrations and bibliographic references. The typography is excellent, but the binding is not commensurate with the general high quality of the book. This book may be recommended to the reader desiring an up-to-date coverage of the modern concepts of the pathogenesis, diagnosis, and treatment of disorders of the thyroid.

Fluoroscopy in Diagnostic Roentgenology. By Otto Deutschberger, M.D., Assistant Clinical Professor of Radiology, New York Medical College, New York. With introduction by Frank J. Borrelli, M.D., F.A.C.R., Professor of Radiology, New York Medical College. Cloth. $22. Pp. 771, with 888 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1955.

This book is divided into two parts. Part 1 starts with the history and development of fluoroscopy. For the benefit of the beginner, the author describes fluoroscopes in detail, covering their operation, the shifting of the tube and screen, and various methods of control of the field of vision. Safety regulations are described. The various types of fluoroscopic image are discussed, also methods, procedures, and the results obtained. The newer electronically amplified fluoroscopic images are included, with description of the physical processes involved and the construction of these units; this chapter covers the entire subject of electronically operated equipment, giving a complete list of references. A clinical evaluation of fluoroscopy compares it with radiography, giving the advantages and disadvantages of both. Various types of lesion that are found are discussed. Foreign body localizations are explained in detail; there is a valuable chapter describing foreign bodies and how they may be localized and discussing various methods of marking to make for ease of surgical removal. Part 2 is devoted to clinical considerations, including lesions found in various parts of the body and the technique of using contrast mediums to visualize various organs under fluoroscopic study. Various parts of the anatomy are taken up in detail with discussion of the technique used in their visualization and of the lesions found in this type of study. The fluoroscope probably is most widely used in the study of the chest. The chapter on thoracic fluoroscopy goes into detail in describing the methods used to study the heart, lungs, and thoracic cage, the various shadows seen, and the differentiation of normal and abnormal conditions. Many physicians are probably unfamiliar with the many ways in which the fluoroscope may be used in the study and differential diagnosis of various types of abdominal diseases. The chapter covering this aspect of the subject should be of particular interest to the beginner and the medical student. The final chapter on the use of the fluoroscope in studying the extremities describes the types of lesion found and the definite aid of the fluoroscope in fractures. The appendix is a compilation of fluoroscopic findings, methods of reporting, and the various forms that might be used in reporting fluoroscopic studies. The The index of authors is most complete, and there is also a subject index. This book should be required reading for any group doing fluoroscopy and especially for beginners. The chief objection to the book is that all the figures are negative instead of positive prints.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

A Primer of Electrocardiography. By George E. Burch, M.D., F.A.C.P., Henderson Professor of Medicine, Tulane University School of Medicine, New Orleans, and Travis Winsor, M.D., F.A.C.P., Assistant Clinical Professor of Medicine, University of Southern California Medical School, Los Angeles. Third edition. Cloth. $5. Pp. 286, with 281 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadephia 6, 1955

This third revision continues the high standards of its predecessors and includes the current accepted knowledge of the complex problems of electrocardiography. Its title is a little misleading due to the use of the word "primer," since the subject is dealt with in a comprehensive way. The word "primer," however, seems to have been used to emphasize the aim of the authors to supply the user with fundamental knowledge and understanding of the scope and limitations of clinical electrocardiography. This goal has been accomplished satisfactorily. The text is profusely illustrated with well-selected figures that aid the user in its understanding. Controversial matters have been omitted, apparently in the belief that they would be unsuitable for an introductory guide. In addition to the initial chapter on the principles of electrocardiography, the material is presented in sections dealing with analysis of the various components of the electrocardiogram and their clinical significance, the precordial leads, the disorders of the heartbeat, and the clinical applications of electrocardiography. An appendix comments on the triaxial reference system, the electrical axis, average norms of the several intervals and waves of the tracings, the P-R interval, duration of QRS, S-T segments, Q-T interval, relation of cycle length to heart rate, and criteria of the truly diagnostic features of the tracing such as the definite evidences of myocardial disease, strongly suggestive evidences of the latter, and certain findings not in themselves abnormal. A key for recording the electrocardiogram ends the text. The volume is well suited to its purpose, well printed and bound, and should be of real help to the experienced cardiologist as well as the beginner in electrocardiography. It can be recommended without reservation.

The Behavior of Pulmonary Tuberculous Lesions: A Pathological Study. By E. M. Medlar, Chief Pathologist, Division of Tuberculosis, New York State Department of Health, Hermann N. Biggs Memorial Hospital, Ithaca, New York. Cloth. Pp. 244, with 136 illustrations. [Hermann M. Biggs Memorial Hospital, Ithaca, N. Y., n.d.]

This work is a summary of Dr. Medlar's experience in the study of the pathology of tuberculosis. Tuberculosis is still with us, although the pattern of its appearance, morbidity, and mortality has changed since 1922 when the Hegeman Memorial Laboratory was opened at Mount McGregor, N. Y. Despite the splendid record of achievement in reducing the death toll from tuberculosis, the disease still ranks among the important public health problems in this country. The skill, precision, and soundness of this work are reflected in the carefulness of the descriptions and beauty of the illustrations. A familiarity with this work should increase the clinician's confidence in the accuracy of inferences he may draw from clinical data and objective findings. Medlar sought to understand the dynamics of tuberculosis, and, if the contents of this book are sufficiently controversial to stimulate further effort to solve the problem, its purpose will have been accomplished. Discussion of views of other writers is purposely avoided, since this is not intended to be a textbook.

The chapters cover a statement of the problem, the experimental approach, autopsy studies of human pulmonary tuberculosis, preliminary discussion of resected specimens, behavior of the parenchymal tuberculous lesion, a study of resected minimal tuberculosis, bronchial lesions in tuberculosis, tuberculosis and bronchiectasis, bacteriological observations, and a reexamination of the problem. The volume is a reprint of original copy appearing in the March, 1955, issue of the *American Review of Tuberculosis* (vol. 71 [part 2] no. 3). This outstanding contribution is the result of patient endeavor.

Lehrbuch der praktischen Orthopädie. Von Dozent Dr. Walther Aberle, et al. Herausgegeben von Ph. Erlacher. Cloth. $24.50. Pp. 549, with 764 illustrations. Verlag Wilhelm Maudrich, Spitalgasse 1b, Vienna IX; Bonn, 1955.

This textbook of practical orthopedics presents the fundamental ideas taught by Dr. Spitzy. The authors are recognized authorities in the field of orthopedics and are former students of Dr. Spitzy. There are sections on special orthopedic techniques, orthopedics in children, adolescent orthopedics, adult orthopedics, and amputations. The book is concerned with investigation and recognition, prevention, and treatment of all deformities and disturbances in body mechanics. It is primarily the result of observations made during the last 50 years. Congenital deformities, rickets, tuberculosis, and paralysis were the chief concern of orthopedics in the early part of the century. World War I produced an extraordinary number of wounds and amputations. There has also been a tremendous increase in automobile and industrial accidents in the last 50 years. As a result, techniques for care of amputations have been rapidly developed. The results of World War II were similar to those of World War I, but there was a far greater number of casualties. During the recent decades, disorders due to mechanical strain and tension have greatly increased. Arthroses and hypertrophic arthritis have become a more important orthopedic problem due to the longer life span. Tremendous advances have been made in surgery for orthopedic conditions in England, America, Germany, and Austria. Advances in all other branches of medicine have also influenced modern orthopedics. There is a discussion under children's orthopedics of club feet, torticollis, and scoliosis. The importance of the intervertebral disk as an etiological factor in scoliosis is discussed. An excellent chapter is devoted to dysplasias of the hip with conservative and surgical treatment. There is a complete description of poliomyelitis, spastic paralysis, and tuberculosis. Epiphysial disturbances and osteomyelitis are considered under adolescent orthopedics. The arrangement of the material is practical and concise. The book is amply illustrated with clear and interesting plates. This is a textbook that gives a view of modern German orthopedics. It is a credit to the authors as well as to their former professor, Dr. Spitzy.

Housing the Aging. Edited by Wilma Donahue. With foreword by Everett J. Soop. Cloth. $3.75. Pp. 280. University of Michigan Press, Ann Arbor, 1954.

This book is a comprehensive and well-documented study and report on housing of the aged (everybody is aging). It is a cooperative effort of the university, the Michigan State Medical Society, the Housing and Home Finance Agency, and the Committee on Aging and Geriatrics of the Federal Security Agency. It recognizes and brings into focus the importance of the care of the aged in health and during illness. Prolonged illness in the aged is truly a catastrophic condition. The report is somewhat critical, and justly so, of the unwillingness of the general hospital to do its share in caring for this group. It brings out the fact that most of the aged are cared for in the home and reports on the limited number of groups devoted to the home care of these people. It also points up the dangers of accident to these people, not only in the home but also in hospitals and nursing homes. It recommends changes and corrections, such as housing them on one floor and with non-skid flooring and safeguards in bathrooms. The necessity for these changes is recognized by all who are familiar with this problem. A thorough outline of the economic problems is presented, as well as suggested methods for improvement. All in all it is an excellent review and deserves a prominent place as a reference book.

Airborne Contagion and Air Hygiene: An Ecological Study of Droplet Infections. By William Firth Wells. Cloth. $6. Pp. 423, with 85 illustrations. Published for Commonwealth Fund by Harvard University Press, Cambridge 38, Mass.; Oxford University Press, Amen House, Warwick Sq., London E.C.4, England, 1955.

This volume represents, in large part, the results of studies on droplet nuclei and their relationship to the spread of disease. The author has been engaged in these investigations for almost 20 years and presents a clear and informative picture of the dynamics of the spread of air-borne infection. Part 1 describes the physics and chemistry of droplets and droplet nuclei and the biology and related physics and chemistry of infection and disinfection. The physiology and parasitology of droplet nuclei contagion are presented. The experimental work that led to the final conclusions is explained and described with clarity. Part 2 is concerned with principles and methods of prevention of infection primarily through an understanding of the forces that are responsible for the spread of air-borne disease. The principles of sanitary ventilation are defined and presented in an understandable manner. The entire book is well written and all terms that may be at all unfamiliar are defined in advance. Good use is made of photographs, tables, and drawings. This book should be of interest not only to the epidemiologist but also to all persons who are concerned, in any way, with preventive medicine.

The Spine: A Radiological Text and Atlas. By Bernard S. Epstein, M.D., Chief, Department of Radiology, Long Island Jewish Hospital, New Hyde Park, N. Y. Cloth. $16.50. Pp. 539, with 721 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1955.

This rather complete roentgenologic textbook treats the vertebral column as a separate entity. It is one of the more important contributions dealing with the spine since the publication of "The Vertebrae" by George and Leonard in 1929. The first chapter describes the normal development and anatomic variations of the vertebral column that serves as a guide to the understanding of the abnormal spine. The following chapters contain an excellent correlation of radiological and clinical findings of all the diseases that affect the spine, primarily or secondarily. The smooth continuous writing affords easy reading, while the numerous illustrations add much to the descriptions. The author's wide experience, plus a most complete and recent list of references, makes this book a valuable radiological treatise.

Practitioners' Conferences Held at the New York Hospital-Cornell Medical Center. Volume I. Edited by Claude E. Forkner, M.D., F.A.C.P., Professor of Clinical Medicine, Cornell University Medical College, New York. Cloth. $6.75. Pp. 411. Appleton-Century-Crofts, Inc., 35 W. 32nd St., New York 1, 1955.

This volume presents, for the first time in book form, a collection of the panel discussions conducted at Cornell as a series of informal clinical conferences open to all physicians of the greater New York area. Some of the discussions have been published in *New York Medicine*, and those included in the book have been further revised and edited to bring them up to date. The topics include such subjects as influenza and primary atypical pneumonia, present status of corticotropin and cortisone, disorders of feet, and home care of patients with acute poliomyelitis. Discussions encompass pathogenesis, diagnosis, prevention, and treatment of certain important diseases. The comments of the panel participants are reproduced in their original dialogue form, supplemented by a summary and list of pertinent references at the end of each discussion. No index is provided, but the topics are readily accessible from the table of contents. General practitioners, specialists, senior medical students, interns, and residents should find this book helpful in gaining additional knowledge of some of the important problems that confront the physician.

Modern Trends in Ophthalmology: Third Series. Edited by Arnold Sorsby. Cloth. $12.50. Pp. 346, with 111 illustrations. Paul B. Hoeber, Inc. (medical book department of Harper & Brothers), 49 E. 33rd St., New York 16, 1955.

This book is divided into six sections. In the first newer developments in anatomy, physiology, and optics are dealt with by outstanding experts in the use of the electron microscope, in current biochemical problems, and in newer aspects of physiological optics. The second section covers diagnostic procedures most important of which are ophthalmoscopy of the extreme fundus periphery and slit lamp microscopy of the posterior segment of the eye. The third section discusses clinical and experimental pathology. About half of the book is devoted to the fourth and fifth sections covering clinical aspects and treatment. The chapter on ocular aspects of diffuse collagen diseases is particularly well written and clearly explained. There are 53

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contributors, some of the outstanding ophthalmologists in the world, who write authoritatively on their particular development or interest in a special phase in ophthalmology.

A Textbook of Medicine. Edited by Russell L. Cecil, M.D., Sc.D., and Robert F. Loeb, M.D., Sc.D., LL.D., Bard Professor of Medicine, Columbia University, New York. Associate editors: Alexander B. Gutman, M.D., Ph.D., Professor of Medicine, Columbia University, Walsh McDermott, M.D., Livingston Farrand Professor of Public Health and Preventive Medicine, Cornell University, and Harold G. Wolff, M.D., Professor of Medicine (Neurology), Cornell University, New York. Ninth edition. Cloth. $15. Pp. 1786, with 201 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1955.

The popularity of this classic textbook is attested by the fact that, since its first appearance in 1927, it has undergone eight revisions. As in the past, the authors have combined the physiological and biochemical aspects of disease with the actual description of the disease. Thirty-nine subjects not covered in previous editions have been added; many of the old sections have been rewritten by new contributors; and some sections have been transferred to a more appropriate grouping. The imposing list of 172 contributors includes the outstanding authorities in the various fields covered. The book is well illustrated, with some of the plates reproduced in color. The two-column page makes for greater ease in reading. References are included at the end of each subject. The indexing is exceptionally complete. This edition should easily gain the enthusiastic reception accorded to its predecessors.

History of the Second World War: United Kingdom Medical Series. Editor-in-Chief: Sir Arthur S. MacNalty, K.C.B., M.A., M.D. The Army Medical Services. Administration: Volume II. Edited by F. A. E. Crew, F.R.S. Cloth. 65s. Pp. 564, with 39 plates. Her Majesty's Stationery Office, P. O. Box 569, London, S.E. 1, England, 1955.

This book is the second and last volume of the British official medical history of World War II. It is concerned chiefly with the organization and medical administration of various special services, some of which were new departures while others were already in being when war started. The volume was edited by Prof. F. A. E. Crew under the supervision of an editorial board appointed by the British government. The first chapter deals with the Army Nursing Service; then comes the chronicle of the Army Hygiene Service, which did much to prevent epidemics of infectious disease in the British Army. Chapter 5 deals with the creation and evolution during the war of the Army Dental Service. The remaining chapters tell of the Army Blood Transfusion Service, the Army Psychiatric Service, the Army Pathology Service, the Army Radiological Service, the Army Ophthalmic Service, and medical provision for the Auxiliary Territorial Service. These historical accounts, no doubt, provide lessons from the past, some of which should be of value in the future.

Hematology. By Cyrus C. Sturgis, M.D., Professor of Internal Medicine, University of Michigan Medical School, Ann Arbor. Second edition. Cloth. $19.50. Pp. 1222, with 78 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1955.

This heavy, bulky, expensive book contains a great deal of information. The historical introductions to most of the chapters are excellent. The modern medical student seems to be in a sort of present-day vacuum from which his teachers often make no effort to extricate him. He knows what the situation is now, but what went before and how difficult it was to reach the present situation are rarely taught. In this isolated environment, dominated as it is by the necessity of accumulating as much information (with as little culture) as possible, modern-day miracles, whether they be vitamin B_{12}, penicillin, or cortisone, are taken for granted. Except for the historical data, Sturgis' textbook is orthodox and singularly lacking in imagination and in the development of concepts but nevertheless straightforward and descriptive. It gives information without stimulation. There is too much reliance on the "literature," often quoted at great length and often uncritically. Although this new edition purports to be up-to-the-minute, some of the older quotations from the literature are retained, despite newer information that may have made them obsolete. Far more information about many of the subjects discussed can be obtained through consulting a number of monographs containing more critically evaluated and authoritative data.

Bedside Diagnosis. By Charles Seward, M.D., F.R.C.P., Physician, Royal Devon and Exeter Hospital, Exeter, England. With foreword by Sir Henry Cohen, M.D., D.Sc., LL.D., Professor of Medicine, University of Liverpool. Third edition. Cloth. $4. Pp. 408, with illustrations. Williams & Wilkins Company; Mount Royal and Guilford Aves., Baltimore 2; E. & S. Livingstone, Ltd., 16 and 17 Teviot Pl., Edinburgh 1, Scotland, 1955.

The author has attempted to treat the problem of diagnosis in internal medicine from a standpoint of interpreting the significant symptoms. This is a refreshing approach and one that should receive more emphasis in our medical schools. Rather than listing the more important diseases and then enumerating the prominent symptoms, the author bases his book around 20 of the most common and significant complaints of the patients. He devotes a chapter to each symptom and discusses, in turn, the pathological physiology, a suggested diagnostic approach, and then the various diseases or disturbances of function that will produce the symptom. He does not neglect the fact that many of these symptoms may at times be of a psychosomatic nature and devotes an additional chapter to this aspect. The discussions are brief and to the point, and the edition is printed in a convenient pocket size. It should be of use not only to the student but also to the practicing physician, who is constantly faced with the problem of selecting the significant symptom and then making the correct interpretation.

Les maladies de l'anus et du canal anal. Par Pierre Hillemand, médecin de l'Hôpital Tenon, Alfred Bensaude, et Jean Loygue, chirurgien des hôpitaux de Paris. Avec la collaboration de Jean André et Edwin Sidi, médecin-chef du Service de dermato-allergie de la Fondation Rotschild. Cloth. 3400 francs. Pp. 283, with 57 illustrations. Masson & Cie, 120 boulevard Saint-Germain, Paris, 6e, France, 1955.

The authors of this splendidly written and well-illustrated manual believe that, although rectal disease is well documented, information pertaining to diseases of the anus and of the anal canal is sparse, at least in France. The purpose of the book, therefore, is to fill this gap. Gastroenterologist, surgeon, and dermatologist have collaborated in the production of this volume. Part 1 includes anatomy, physiology, and symptomatology; part 2 pertains to anal spasm and anal atony; and part 3 deals with anal diseases. The illustrations, some in color, are excellent. To avoid possible confusion, the reader must realize that the authors include the perineal portion of the rectum in the term "anal canal." This work, therefore, necessarily involves some rectal problems, a circumstance that does not, however, detract in the least from the stated objective of the book. Every physician who is interested in the better management of anorectal disease should find this manual a valuable addition to his library.

Principles of Animal Virology. By F. M. Burnet, Director, Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia. Cloth. $10. Pp. 486, with 35 illustrations. Academic Press, Inc., 125 E. 23rd St., New York 10, 1955.

The widespread interest in poliomyelitis vaccine has made the appearance of this book most timely. The author states, "One can agree wholeheartedly with the current decision of American authorities to use formalin-killed virus as the vaccine for the first large scale test, but still retain the opinion that, in the long run, the more natural method will prove the most effective and will eventually be adopted as the definitive method for the prevention of poliomyelitis." Much space is given to such subjects as morphology, cellular structure, and variation of viruses, but the practical application of knowledge available is not neglected. In the final chapter on classification and nomenclature, the viruses causing disease in animals and man are divided into five groups—Rickettsiales, Poxvirus, Herpesvirus, Poliovirus, and Myxovirus. The author has had a long experience with virus investigations and has cited numerous references to the work of nearly a thousand other workers from many countries. The bibliography is excellent.

QUERIES AND MINOR NOTES

BLOOD PRESSURE READINGS

TO THE EDITOR:—*Present-day thinking on what constitutes arterial hypertension and when it becomes necessary to institute medical treatment seems in a rather confused state. How long is it necessary to record pressure readings under varying conditions before one may conclude what the basic pressure is? At what level, particularly diastolic, should the patient be advised that he has high blood pressure and treatment instituted?*

M.D., Arizona.

ANSWER.—There are so many variables involved in these two questions that a dogmatic answer would be misleading. In the first place, from the viewpoint of therapy, the habitual blood pressure during a typical, routine day is more significant than the basal level at rest or under sedation. The patient rarely spends more than a third of his time at rest. Secondly, the degree of variation on different occasions will differ greatly in different patients; in some four or five readings, observed in the morning, after lunch, in the evening, after a "tough time" on the job, or a row at home, the tension will fluctuate only slightly. In others the spread of variation may be great. Wide fluctuations are indicative of arteriolar spasticity and contraindicative of extensive arteriolar sclerosis and are therefore of considerable prognostic import. However, the extent of arteriolar spasticity versus arteriolar sclerosis may be determined in a very few minutes on the first examination and discovery of arterial hypertension by the application of the amyl nitrite test (*Arch. Int. Med.* **46:**227 [Aug.] 1930; Geriatric Medicine, ed. 3, Philadelphia, J. B. Lippincott Company, 1954). This measures the fall in diastolic tension on the inhalation of amyl nitrite and is so prognostically significant that it should be included in the initial evaluation of all instances of hypertension. Other variables are the age of the patient (as a rule, the later in life the date of onset, the slower the progression of hypertensive disease); the known duration of the disorder (if the patient reports that a blood pressure of 180/110 mm. Hg was found 15 years previously and the level is nearly the same now, it is clear that the disorder is not progressing rapidly and there is no cause for alarm); and, last but not least, the probable etiological background (including prior nephritis, protracted anxiety, and plumbism).

If three or four readings made under variable circumstances vary no more than 20 mm. Hg systolic and 10 mm. Hg diastolic, the mean of the observations may be considered the habitual blood pressure of the patient. If the variations are extreme, as for example from 210/130 to 140/90 mm. Hg, it is clear that the situation is one of arteriolar spasticity, early in the course of the disease, and that the basal or habitual level is not significant. What is important is that this is evidence of vulnerability on the part of the arterioles to respond with excessive constriction upon stimulation; identification of the sources of the vasopressive stimuli (such as certain emotional situations or pheochromocytoma) and their correction becomes the primary therapeutic objective. The range of what is considered "normal" or "habitual" levels of arterial tension has been widened in recent years. An extensive study (Master, A. M.; Garfield, C. I., and Walters, M. B.: Normal Blood Pressure and Hypertension: New Definitions, Philadelphia, Lea & Febiger, 1952) leads to the conclusion that permissible normal systolic tensions cover a spreading, wider range as age advances. They state that at age 20 to 24 years the systolic range is from 100 to 130 mm. Hg, the diastolic from 60 to 85 mm. Hg, at age 40 these are systolic 105 to 150 mm. Hg, diastolic 65 to 94 mm. Hg; at age 50, systolic 110 to 160 mm. Hg, diastolic 70 to 100 mm. Hg; and at age 60, systolic 115 to 175 mm. Hg, diastolic 70 to 100 mm. Hg. These are statistically valid "normal" variations, but not necessarily levels of optimum health and/or longevity.

The second question, about when the patient should be informed that he has high blood pressure and treatment recommended, is also not amenable to dogmatic answer. This must be individually decided, taking into consideration the personality of the patient, the variability of the arterial tension, and the probable etiological picture. Persistent diastolic pressures over 110 mm. Hg warrant attention; borderline situations are often best handled by an explanation that they are borderline, probably only potentially significant, with no implication of immediate jeopardy, but that the time to arrest progression and eliminate so far as possible contributing causative factors is now rather than 10 years from now when the disease may be fully established. The fuller, franker, clearer, and more comprehensive the instruction of the patient into the nature, significance, and progressiveness of hypertension, the less likely is undesirable apprehension. Here as much as anywhere in medical practice the physician must be the teacher, the explainer, and the reassurer. Conservative therapy with continuing but not overdone reassurance and study and correction of factors contributing to the hypertension are often sufficient to obtain excellent and lasting results. It is frequently expedient to emphasize that the findings merely reveal that the patient is vulnerable, reacting by a rise in blood pressure, to certain situations (such as excessive fatigue, heavy responsibility, the pressure of deadlines, and anger) just as a blond person is vulnerable to sunburn, and that protection against sunburn when exposure is unavoidable is preferable to treatment after the injury is sustained. Lastly, it is important to keep in mind that the initial reading of the arterial tension, observed at the first visit of a new patient, is almost invariably higher than subsequent observations. The patient is frightened, anxious as to what he or she will undergo, what will be found, and as yet not fully certain of the physician. These initial readings, unless excessively high, must be discounted and no mention made of the hypertension until its persistence is confirmed by subsequent observations.

STARVATION TREATMENT FOR DIABETES

TO THE EDITOR:—*Please tell me if the old Frederick Sterns and Allen starvation treatment for diabetes mellitus has merit and if so outline the treatment.*

K. E. Kerby, M.D., Nyssa, Ore.

ANSWER.—The question probably refers to the treatment by undernutrition as advocated by Frederick M. Allen in THE JOURNAL (**63:**939 [Sept. 12] 1914; and **66:**1525 [May 13] 1916); in the *Boston Medical and Surgical Journal* (**172:**743, 1915); and in the *American Journal of Medical Sciences* (**150:**480, 1915). Undernutrition is acknowledged universally to have merit in the treatment of the obese diabetic patient and in most diabetics will often result in the urine becoming sugar free and may make unnecessary the use of insulin. In the preinsulin days, it was of great value, because it reduced the liability to acidosis and diabetic coma and encouraged the doctor to treat his patients intensively and to learn how much of the diet was utilized. Undernutrition explained why certain bizarre diets or diets with high fat and low carbohydrate and protein were of value. Actually they were undernutrition diets. Even today, utilization of the principle of undernutrition, combined with insulin, gives the speediest and best results in the inauguration of treatment. However, because of insulin, absolute fasting is practically never necessary; indeed, even though an individual does omit food he does not actually fast but subsists on the carbohydrate, protein, and fat stored in his own body. The original articles by Allen well deserve rereading by anyone deeply concerned in the treatment of diabetes. The following paragraph outlines his methods of treatment.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

"If the patient is moderately emaciated, with a negative carbohydrate balance and acidosis, he is put to bed and receives no food whatever. Present experience indicates that even in severe cases ketonuria may by this method be made to disappear entirely. Several repetitions of the foregoing routine may be necessary for this purpose. All food contains danger, tending toward either glycosuria or ketonuria. The carbohydrate of the diet is seldom reduced below 50 gm. and is preferably kept higher. If carbohydrate must be kept low, the total diet is kept low. The diet is so chosen that glycosuria not ketonuria, is the signal of overstrain. If there has been no glycosuria, a slight addition to the diet is made after each fast-day. Each day's diet is calculated exactly, and the nitrogen-balance is watched. The attempt to increase weight should be the last rather than the first step in treatment. It is attempted to keep the metabolism at the lowest safe level until the patient is taking from 100 to 150 gm. of carbohydrate (mostly as green vegetables) daily, with fast-days interposed often enough to prevent any trace of glycosuria from appearing. Then protein is cautiously added, always being kept rather low; and in favorable cases the weight and well-being may finally improve under gradual additions of fat. The radical procedure here described is that used for the most severe cases. In milder cases the treatment may be correspondingly milder. Primary loss of weight is intentional."

Joslin's statistics show the average duration of life of diabetics who died between 1897 and May 31, 1914, was 4.9 years but in the subsequent eight-year period, when the treatment was influenced by Allen's undernutrition ideas ending with the discovery of insulin, it rose to 6.1 years, and the mortality from diabetic coma dropped from 63.8% to 41.5%. Joslin's method (Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, p. 243, 1916) for the utilization of undernutrition was as follows:

"Preparation for Fasting: In very severe, long-standing, complicated, obese and elderly cases, as well as in all cases with acidosis without otherwise changing habits or diet, omit fat, after two days omit the protein, and then halve the carbohydrates daily until the patient is taking only 10 grams; then fast. In other cases begin fasting at once.

"Fasting: Fast four days, unless sugar-free earlier. Allow water freely; tea, coffee and clear meat broths as desired."

By the above plan few cases needed to fast. As soon as the urine was sugar free the diet was gradually increased. In those bygone days without insulin, undernutrition really revolutionized treatment in diabetes and much further progress undoubtedly would have been made in the next decade had insulin not been discovered. Of course, insulin was so efficient that it almost outmoded all the good ideas in the diets painstakingly learned during the preceding century.

SACCHARIN AND THROMBOCYTOPENIC PURPURA

To the Editor:—*A 73-year-old practicing physician was found one year ago to have a thrombocytopenic purpura, with a platelet count that varies from 18,000 to 45,000 per cubic millimeter. He has a normal red blood cell count, normal hemoglobin level, and a normal total white blood cell count but with a moderate relative leukopenia. The spleen is not enlarged, and sternal puncture gave equivocal findings. He shows moderate ecchymosis following slight trauma but has not had mucous membrane hemorrhages. After gastrectomy for duodenal ulcer five and a half years ago, he was given large doses of penicillin without untoward reaction. For three years before discovery of the condition, he used saccharin freely in coffee and cereals in amounts of 1 to 4 grains (0.065 to 0.25 gm.) daily. Is there any evidence to support the suspicion of the saccharin as a causative factor in this condition?*

M.D., California.

Answer.—This question was reviewed both by a consultant with extensive experience in examining patients who use saccharin daily and by another consultant who is interested in hematology and has seen a large number of patients with thrombocytopenic purpura. Neither consultant thinks that the saccharin has had anything to do with this condition.

DIABETES INSIPIDUS

To the Editor:—*A 4½-year-old child has diabetes insipidus, bone destruction on both sides of the mandible, a bony defect in the right mastoid, and a small, slightly osteoporotic area in the right frontal bone. She has anemia (hemoglobin level 8.7 gm. per 100 cc., and red blood cell count 3,240,000 per cubic millimeter). The clinical diagnosis of histiocytosis, Hand-Schüller-Christian type, was confirmed by biopsy. The diabetes insipidus is under control with powdered posterior pituitary extract. Contemplated roentgen therapy is to be given by a qualified radiologist. What is the potential danger of radiation damage to the brain? What other therapeutic measures are available for histiocytosis? Because of the granulomatous nature of lesions of this type, antibiotic treatment has been suggested besides x-radiation. What antibiotic should be used?* *Heinz C. Meyer, M.D., Konnarock, Va.*

Answer.—The best method of handling this patient would be with radiation therapy. Each area of known involvement should be treated at the outset. The dosage necessary to produce regression of the lesions is low, in the neighborhood of 300 r. After the first course of treatment, the patient should be rechecked at frequent intervals (about three months) and further treatment given to any new areas that may appear or to areas that are not improving. With low total dosage of x-rays, there should be little chance of brain damage from x-rays if they are administered by an experienced radiologist. Antibiotic therapy cannot be expected to affect this disease. The articles listed below outline methods of therapy and results that may be achieved.

References

Wallace, W. S.: Reticulo-Endotheliosis: Hand-Schüller-Christian Disease and the Rarer Manifestations, Am. J. Roentgenol. **62**: 189-207 (Aug.) 1949.

Childs, D. S., Jr., and Kennedy, R. L. J.: Reticulo-Endotheliosis of Children: Treatment with Roentgen Rays, Radiology **57**: 653-658 (Nov.) 1951.

HOSTILE CERVICAL MUCUS

To the Editor:—*I have encountered a second infertile couple who demonstrated an abnormality that I have not seen discussed. The postcoital examination shows normal cervical mucus with no spermatozoa while the semen in the vagina shows large numbers of apparently normal and active spermatozoa. Although the spermatozoa lash heads and tails about vigorously, not one was seen to progress any distance at all on the slide. Both women have been demonstrated to be normal by all available tests. The first husband was referred to a urologist who gave a normal report and mentioned an excellent semen analysis with 95% motility initially and 50% after 24 hours. I have tried washing the spermatozoa obtained from the vagina and titrating with alkali and acid without causing any progress to be made, even though the spermatozoa continued trying through a wide pH range. Intrauterine instillation of the husband's spermatozoa has been tried several times without avail. What might be done to help these patients?*

Thomas V. Judge, M.D., Orange, N. J.

Answer.—Hostile cervical mucus is a frequent cause of infertility. It is usually due to increased viscosity and is often produced by infection. It may be associated with a high endocervicitis that is amenable to antibiotic therapy or cautery, but the viscosity is more frequently due to lack of response to estrogenic stimulation just prior to ovulation. Theoretically, it is possible to bypass this obstruction to the penetration of spermatozoa by means of intrauterine insemination. However, this procedure is both technically difficult and potentially dangerous. Several months' trial with estrogenic hormones is indicated before any other form of therapy is attempted. Diethylstilbestrol therapy, 0.1 mg. daily during the first two weeks of the menstrual cycle, should be given. If this small dose does not produce the desired effect, it may be doubled, with the understanding that the latter dose may delay ovulation. Estrogens may also be administered by hypodermic injection: 5 mg. of estradiol benzoate between the 5th and 10th day of the cycle has been shown to be effective in thinning out the cervical mucus. A great deal has been published on the subject of hostile cervical mucus, especially in the *Journal of Fertility and Sterility*.

TREATMENT OF PARATHYROID TETANY

To the Editor:—*A 28-year-old woman, gravida 1, had a subtotal thyroidectomy in February, 1954, for a diffuse toxic goiter. A pathologist examined the specimen and found no evidence of parathyroid tissue. Nevertheless, the patient developed tetanic symptoms and a low blood calcium level (6.5 mg. per 100 cc.). She was treated with intravenously administered calcium and parathormone for several days with good response and then was gradually given oral doses of calcium lactate 20 grains (1.3 gm.) four times a day and 2 cc. of dihydrotachysterol every other day. After a month, the dosage of the dihydrotachysterol was gradually reduced to 1 cc., and after another month to once a week, but the dosage of calcium lactate was kept the same. Pregnancy intervened, and she carried a normal female infant to full term and had an uneventful delivery with saddle block anesthesia. She was maintained on the 20 grains (1.3 gm.) of calcium lactate and the weekly dose of 1 cc. of dihydrotachysterol throughout the pregnancy and shortly afterward. A blood calcium level taken post partum on the fourth day was 8.6 mg. per 100 cc. Lactation was promptly suppressed with stilbestrol. She went home symptom free. The dihydrotachysterol is now being given in doses of 1 cc. every three weeks, but any effort to cut the calcium lactate below 15 grains (1 gm.) three times a day results in numbness and tingling of the hands and feet. Now she is almost three months post partum, and she has begun to develop some joint pains, difficulty in straightening up from a sitting position, and some stiffness in the knees. I would appreciate suggestions.*

M.D., Michigan.

Answer.—It is common practice to treat parathyroid tetany by the method outlined in the case report. Dihydrotachysterol or vitamin D frequently is not required if the patient has received adequate amounts of calcium. It is considered good practice to give sufficient calcium to maintain the serum calcium level between 9 and 11 mg. per 100 cc., if possible. The effectiveness of treatment should be judged on the basis of control of blood calcium level—rather than on control of symptoms, because some patients fail to notice or will ignore a few mild symptoms or possibly have no symptoms most of the time despite abnormally low serum calcium levels. If the serum calcium level is not maintained within normal range, trophic disorders are more likely to develop. Changes such as those that occur in the nails and hair are reversible; development of cataract is not reversible and must be prevented. The following therapy is recommended. Calcium lactate powder, a level to slightly rounded teaspoonful, should be given three times a day. The powder can be easily prepared for effective administration by dissolving it in hot or boiling water, 1 teaspoonful to each glass of water. It usually can be prepared in the evening and then refrigerated until it is needed the following day. If the calcium lactate powder is not sufficient to raise the serum calcium level to normal range, dihydrotachysterol or vitamin D may be added in a dosage sufficient to do so. Vitamin D is thoroughly efficient; a dose from 50,000 to 150,000 units or more daily may be necessary. With this therapy, there is no evidence that metastatic calcification will occur, provided hypercalcemia does not exist. Hypercalcemia can be prevented by adjusting the treatment according to the serum calcium and phosphorus levels estimated at intervals of a few weeks or months, or if the patient watches for hypercalciuria by means of the Sulkowitch test.

MASS IMMUNIZATION

To the Editor:—*Are there any contraindications in giving tetanus toxoid and typhoid-paratyphoid in the same injection for mass immunization?*

Duane F. Hartshorn, M.D., Fort Collins, Colo.

Answer.—For effective immunizations there should be no objection to combining tetanus toxoid and typhoid-paratyphoid in the same injection. However there is always the possibility of having a rather severe reaction from typhoid-paratyphoid vaccine that someone might attribute to the mixture of antigens. A more important matter to consider for mass immunization is the requirement that a separate syringe as well as a different needle be used for each person. The danger of transmitting infectious hepatitis when there are multiple injections from the same syringe should not be overlooked nor ignored.

DRAINAGE FROM AMPUTATION STUMP

To the Editor:—*A patient had a midthigh amputation six months ago because of diabetic gangrene of the left leg. Diabetes is adequately controlled by diet and 20 to 25 units of Lente insulin daily. However, since her amputation there has been some mucopurulent drainage from three small places on the stump scar line that has not responded to treatment with broad spectrum antibiotics or penicillin. Culture from the drainage sites revealed Micrococcus (Staphylococcus) albus as the predominating organism. What suggestions have you to offer to stop the persistent drainage?*

James P. Landay, M.D., Duquesne, Pa.

Answer.—Persistent drainage in a stump following amputation for gangrene is likely to result from devitalized tissue left at the time of surgery. It is difficult to recognize muscle with a marginal blood supply. The edema following the surgical trauma is sufficient to impair the vitality of such tissue. Another source of drainage is the large pedicle distal to ligatures. The custom of stripping the periosteum from the femur prior to transection may devitalize bone. Bone chips from the saw may form the nidus. Drainage from any surgical wound may persist due to a foreign body left in the wound. Excessive numbers of large sutures, or even a sponge, may be suspected. Drainage occurs occasionally from a low-grade micrococcic infection of subcutaneous fat. Injection of the sinus with a contrast medium such as lipiodol may yield a clue as to the site of the difficulty. Gentle exploration of the sinus permits identification and removal of the cause with resultant healing.

AUSCULTATORY GAP

To the Editor:—*A man, aged 56, is physically essentially normal except for hypertension from 210 to 160 mm. Hg systolic and 110 to 90 mm. Hg diastolic. There is a complete loss of sound after a drop of 30 mm., recurring faintly at 40 mm. drop, and becoming normally audible again to the diastolic. I cannot rationalize this finding. Such applies only to right arm and in all positions.*

J. J. Blue, M.D., Cedarville, Mich.

Answer.—This is the phenomenon known as the auscultatory gap. If the cuffs are inflated rapidly so as to avoid venous congestion distal to the cuff, no gap occurs when the cuff is deflated. When inflation is done gradually, the gap is observed on deflation. Prolonged partial occlusion of the veins of the arm during the inflation of the cuff affects both arterial and venous pressure distal to the cuff and the effect on the arterial pressure seems to be the determining factor in eliciting the auscultatory gap. For details see C. Ragan and J. Bordley III (Measurements of Blood Pressure *Bull. Johns Hopkins Hosp.* **69**:504, 1941).

MALE CLIMACTERIC

To the Editor:—*Is there such a condition as the male climacteric in a male aged 52 years that comes on suddenly with hot flashes, occasional slight temperature, nervousness, mental lassitude, burning of feet, and impotency? The 17-ketosteroids in a 24 hour urine specimen are above normal, and the remainder of the physical examination is normal. Large or small doses of androgens are of no help. Both androgens and estrogens are of no help in controlling the hot flashes and mental condition. Nothing improves the potency. Are males permanently impotent after the climacteric?*

M.D., Michigan.

Answer.—The onset of climacteric in the male is not sudden. A skull x-ray with particular reference to the sella turcica is indicated in all males who have unexplained loss of potentia. Testosterone propionate, intramuscularly, three times weekly for four to six weeks will restore lost potentia that is organic in origin but not psychic. Males are not permanently impotent after the climacteric. If no organic disease (systemic or local) is present, further psychiatric evaluation and treatment is indicated.

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